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Proposed Reductions in Larkspur Ferry Service

March 1981

GOLDEN GATE BRIDGE, HIGHWAY AND TRANSPORTATION DISTRICT

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PROPOSED REDUCTIONS

IN

LARKSPUR FERRY SERVICE

March 1981

CONTENTS

1.0 SUMMARY

2.0 DESCRIPTION OF PROPOSED ACTION Page 11
2.1 Location and Boundaries
2.2 Existing Ferry Service
2.3 Objectives of the Proposed Action
2.4 Characteristics of the Proposed Action

3.0 ENVIRONMENTAL SETTING Page 25
3.1 Land Use
3.2 Population and Employment
3.3 Climate and Air Quality
3.4 Energy
3.5 Golden Gate Bridge and U.S. 101 Highway Travel
3.6 District's Public Transit Services
3.7 Transbay Travel Characteristics
3.8 District Financial Characteristics
3.9 Water Quality
3.10Local Plans and Policies

4.0 ASSESSMENT OF ENVIRONMENTAL EFFECTS Page 59
4.1 Traffic and Transportation
4.2 Energy and Air Quality
4.3 Socioeconomic Impacts
4.4 Financial Impacts
4.5 Wave Related Impacts
4.6 Other Impacts

5.0 ALTERNATIVES Page 71
5.1 The Two Alternative Proposals
5.2 Alternatives 2A and 2B
5.3 Other Alternatives
5.4 Alternatives to the Proposed Action

6.0 MITIGATION MEASURES Page 77
6.1 Ferry System Improvements
6.2 Non-Commute Ferries at Special Times
6.3 Operate Additional Buses
6.4 Ferry Utilization Policies

AUTHORS AND PERSONS CONTACTED

REFERENCES

APPENDICES: A. Review and Analysis of Alternative Ferry Division , Financial Projections - Harvey M. Rose Accountancy Corporation Page 81

3 1223 07121 9381

LIST OF TABLES AND FIGURES

Table	Figure	
	2-1	Transit Service Area
	2-2	System Map (Bus)
	2-3	System Map (Ferry)
	2-4	System Map for Larkspur Ferry Feeder Bus Service
	2-5	Weekday Larkspur Ferry Schedules For Existing & Proposed "Austere" Service
2-1		Ferry Timetable
2-a		General Information
2-2		Timetable For Larkspur Ferry Feeder Bus Service Rt #15,19,25
2-3		Timetable For Larkspur Ferry Feeder Bus Service Rt #29,31,37
2-4		Timetable For Larkspur Ferry Feeder Service Rt #41,51,61
2-5		Proposed Timetable - Larkspur Ferry
3-1		San Francisco Bay Area Population and Land Area
3-2		Distribution of Poor, Elderly and Minorities
3-3		Population, Income and Age
3-4		Distribution of Golden Gate Bridge Users By County of Vehicle Registration
3-5		Golden Gate Bridge Traffic - Fiscal Year 71/72-79/80
3-6		District Transit Patronage
3-7		Person Trips By Mode - FY75/76 Through 79/80 Transbay SB 6-10AM
3-8		Transit Service & Usage By County FY 75/76 Through 79/80
3-9		Characteristics of Single Occupant Automobile Commuters on the Golden Gate Bridge
3-10		Age and Sex of Ferry Passengers
3-11		Income and Auto Ownership of Ferry Passengers
3-12		Socio-Economic Comparison of Bus Patrons
3-13		Fare - Bus Transit
3-14		Fare - Ferry Transit
3-15		Bus Fare Tables by Fare Zones
	3-1	Golden Gate Bridge Traffic (1937 to present)
	3-2	Golden Gate Bridge SB Traffic Volume in 15 Minute Intervals 6-10 AM Commute Period May, 1980
	3-3	Marin 101 Congestion Locations & Periods
	3-4	Regional Transit Network
4-1		Patronage on Larkspur-San Francisco Scheduled Ferry Crossings Subject to Proposed Cancellation
4-2		Reduction in Fuel Consumption of Larkspur Ferry Operations Resulting From Proposed Reduction of Ferry Service
4-3		Effect of Proposed Service Reductions on Ferry Division Operating Deficits and Financial Performance
	5-1	Larkspur Ferry Schedules Showing Variations On Alternative 2
5-1		Comparative Cost of Variations To Alternative 2

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1.0 SUMMARY

The Golden Gate Bridge, Highway and Transportation District is a special district which operates and maintain the Golden Gate Bridge, and provides public transit service within Marin and Sonoma Counties and between San Francisco, Marin and Sonoma Counties and provides ridesharing services for commuters of San Francisco, Marin, Sonoma and Napa Counties. It provides these services under authority of California state law.

The District's funding is provided from the collection of tolls from persons using the Bridge and fares from patrons of the transit system. To the extent possible, these revenues are supplemented by capital and operating subsidies from Federal, State and local government. The District does not levy a property, sales or other form of tax.

The District provides its transit services by the operation of a fleet of 265 buses and four ferries. Ferry service between San Francisco and Sausalito is provided with a single diesel powered vessel. Between San Francisco and Larkspur it is provided using two of a fleet of three gas turbine powered vessels. Currently the Larkspur ferries make nine crossings in each direction each weekday and four crossings in each direction each Saturday, Sunday or Holiday. Following the increases on March 1, 1981, full adult fares for the Larkspur ferries are $2.00 per trip or $36.00 for a book of 20 tickets. A reduction in the price of ticket books is under consideration.

In recent years the District has made a series of adjustments to its plans and operations to accommodate the growth in demand for its transit services, inflation, shortage of revenues and public priorities which increasingly emphasize economy and productivity of operations. It has set an objective that the "operating ratio" (the ratio of fares and other operating revenues to operating costs) of its transit services should equal or exceed 50%. It is concerned that the operating deficit per passenger be kept as low as possible and compare equitably between the various transit services provided.

Since the beginning of Larkspur ferry service in December 1976 the ferries have proved to be a reliable and very attractive mode of travel and the present two-vessel service is filled to about its practical capacity during the commuter peak periods. Passenger loads are lower during the off-peak and weekend periods.

To reduce ferry operating deficits and improve ferry financial performance, as measured by the operating ratio and deficit per passenger, the proposed action would discontinue off-peak and weekend Larkspur ferry service, and continue operation of only certain peak period service. Two Alternative Proposals are considered. Under Alternative 1, two vessels would sail from Larkspur to San Francisco during the morning commute period, remain in San Francisco during the mid-day and return to Larkspur during the evening commute period. Under Alternative 2 the same crossings as Alternative 1 would be operated and, in addition, one or more round trips would be made. To further conserve fuel the ferry crossings

which would continue to be operated would operate at reduced power by using fewer of the ferries' three engines. This would result in minor changes to the scheduled departure and/or arrival times of these crossings. Nine ferry feeder bus services which currently connect with some or all of the ferry arrivals and departures at Larkspur would be reduced; with continued operation of only those buses which connect at Larkspur with the two morning ferry departures and two evening arrivals to be retained under Alternative 1.

A review of the impacts of the proposed action is summarized in Table 1-1. It is concluded that the proposed action could have no significant effect on the physical environment.

The action would result in a very small increase in traffic volumes on the Golden Gate Bridge and its connecting roads which would occur at relatively congested times, with the exception of certain summer afternoons. On these afternoons the magnitude of the diverted ferry traffic would be too small to have a significant effect on the state of congestion. To mitigate any possible effect on weekend traffic special ferry schedules could be operated on selected summer weekends and holidays.

The proposed action would probably result in overload, at certain times, on Golden Gate Transit bus Routes #50 and #70. This effect could be mitigated by the operation of additional buses, either on Route #50 or #70 or as extra commute service buses to serve central Marin County.

After allowing for the effect of increased automobile travel, it is estimated that the proposed action would conserve approximately three quarters of a million gallons of fuel per year. Nitrogen oxide emissions would also be reduced, though it is possible that the carbon monoxide and unburned hydrocarbon emissions from increased auto traffic would exceed the reductions in these emissions resulting from reduced ferry operations. The amount of such increase would, however, be insignificant.

The proposed action may have minor economic effects on some ferry division employees and businesses which cater for ferry riders, and may be an inconvenience to some regular users of the ferry service. To help mitigate these effects, regular basic bus service could be provided between the San Francisco Ferry Terminal and the Larkspur Ferry Terminal car park and Larkspur Landing Complex. The proposed action would not disproportionately impact racial minorities, the poor or the elderly. It would however, result in a 37% reduction in the public transportation services between San Francisco and Marin, which are accessible to persons in wheelchairs. This impact could be mitigated by the provision of alternative accessible transportation.

The proposed action would reduce ferry deficits by $1.9 to $2.0 million per year and improve the ferries financial performance by increasing the ferry system's operating ratio from 35% to about 40% and reducing the operating deficit per passenger from $2.90 to about $2.43. The reduced levels of service would constitute a less intensive utilization of the $38 million which has been invested in the ferry vessels and facilities.

The action is compatible with local policies and plans.

TABLE 1-1

SUMMARY OF IMPACTS

OF PROPOSED REDUCTIONS IN LARKSPUR FERRY SERVICE

IMPACTS		"AUSTERE" SERVICE PROPOSALS ALTERNATIVE 1	ALTERNATIVE 2
1. Traffic and Transportation			
a) Travel Delay On U.S. 101 due to added Vehicles	-- Commute Peaks	None	None
	-- Weekend Peaks	Insignificant	Insignificant
	-- Other times	None	None
b) Overload Existing Bus Services			
	-- Rt #70	Probable	Probable
	-- Rt #50	Probable	Probable
	-- Other	None	None
c) Effect Any Other Passenger Service		None	None
2. Energy and Air Quality			
a) Potential to Increase Fuel Consumption		None	None
b) Potential to Increase Vehicular Emissions		Insignificant	Insignificant
3. Socio-Economic Impacts			
a) Potential to Cause Hardship-Users		None	None
	--Employees	Minor	Minor
	--Businesses	Minor	Minor
	--Others	None	None
b) Disproportionally Impact Minorities,		None	None
	--Poor	None	None
	--Elderly	None	None
	--Handicapped	Minor	Minor
4. Financial Impacts			
a) Reduction in Ferry Operating Deficit	from $5.2 million to	$3.2	$3.3
b) Improvement in Ferry Operating Ratio	from 35% to.	40%	40%
c) Reduction in Deficit Per passenger	from $2.90 to	$2.43	$2.44
d) Capital Utilization		Reduced	Reduced
5. Local Policies and Plans		Compatible	Compatible
6. Other		None	None

Note: Refer to Table 5-1 for comparative costs of Alternative 2A & 2B

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2.0 DESCRIPTION OF PROPOSED ACTION

The Golden Gate Bridge, Highway and Transportation District operates the Golden Gate Bridge, the Golden Gate Transit bus system, various ride-sharing programs and the ferry services. A diesel powered vessel operates between the San Francisco Ferry Terminal and Sausalito in Marin County. A fleet of three gas turbine powered vessels operates between the San Francisco Ferry Terminal and Larkspur Ferry Terminal in Marin County. It is proposed to reduce ferry operations in order to reduce ferry operating deficits. Sailings between San Francisco and Larkspur would be reduced as follows: the four round trips currently operated each weekend day and public holiday would be discontinued; and the nine round trips currently operated each weekday would be reduced to two trips one way only to San Francisco during each morning commute period and two trips one way only to Larkspur during each evening commute period. The option of several additional round trips from Larkspur to San Francisco and back to Larkspur during the evening commute period is also being considered.

2.1 Location and Boundaries

The location of the Golden Gate Bridge, the service area of the Golden Gate Transit Bus system and the routes and terminals of the Golden Gate Ferries are shown in Figure 2-1. A system map showing the bus and ferry routes is shown in Figure 2-2. Ferry service over the 5.5 mile route between the San Francisco Ferry Terminal and the Golden Gate Ferry Landing in Sausalito has been provided since August, 1970 by the M.V. Golden Gate, a 15-knot, 575-passenger, diesel-powered vessel. Service over the 11.25-mile route between the San Francisco Ferry Terminal and the Larkspur Ferry Terminal is provided by a fleet of three 25-knot, 725-passenger, gas-turbine powered vessels. The GT Marin entered service in December, 1976, the GT Sonoma in February, 1977, and the GT San Francisco entered service in September, 1977. Due to the need to limit operating expenses and to complete repairs under warranty, present ferry schedules only employ two of the three GT vessels at any one time.

The San Francisco Ferry Terminal is located behind the historic Ferry Building at the foot of Market Street in San Francisco. The Larkspur Ferry Terminal is located at the bayshore some 2,000 feet east of the intersection of the U.S. 101 freeway and East Sir Francis Drake Boulevard in Larkspur, Marin County. The Ferry Landing in Sausalito is located on the waterfront adjacent to the intersection of Humboldt Street and Johnson Street, Sausalito, Marin County.

2.2 Existing Ferry Service

The current schedules for the Larkspur and Sausalito ferry services are shown in Tables 2-1. A system of feeder bus routes operate between the Larkspur Ferry Terminal and points in Marin County. The schedules of these buses are timed to permit an efficient transfer to and from the ferries. Route 19 operates Monday thru Friday except holidays along the Ross Valley from 5:40AM to 8:30PM. Seven other routes operate during the weekday commute periods only, to the Terminal during the morning commute period and from the Terminal during the evening commute period.

Route 61 operates two round trips per day, on Saturdays, Sundays and Holidays between the Terminal and certain access points to West Marin recreation areas. The System Map for these feeder bus services is shown on Figures 2-3 and 2-4. Their schedules are shown on Tables 2-2, 2-3 and 2-4.

In addition Marin County local bus route #1 which connects Novato-San Rafael-Corte Madera and Marin City, with service every 30 minutes on weekdays and every 60 minutes on Saturdays, stops on Sir Francis Drake Boulevard at the entrance to the ferry terminal parking lot. Transbay basic bus Route #50 serves the freeway bus pad at Lucky Drive in Larkspur, a three quarter mile walk from the ferry terminal.

A privately operated ferry provides commute period service between San Francisco and Tiburon in Marin County. The proposed service reductions apply only to the Larkspur ferries. Details of sailings and connecting bus services for the Sausalito and Tiburon ferries are described in Section 3.3.

A fare of $2.00 per trip is charged on both the Larkspur and Sausalito ferries. Convenience books of 20 tickets, each good for one ferry trip, are available at $36.00 per book for the Larkspur ferries and $26.00 per book for the Sausalito ferries. An adjustment to $31.50 per convenience book for the Larkspur Ferries, to achieve parity with equivalent bus fares, is under consideration. Details of bus and ferry transit fares are given in 3-13 and 3-14.

2.3 Objectives of the Proposed Action

The proposed ferry service reductions are part of a series of actions, t by the District in recent years, to adjust the District's plans and operation to changing conditions, which include continued growth in demand for services inflation in the cost of fuel, other materials, equipment and labor, shortag of revenues and public priorities which increasingly emphasize economy and productivity of operations. These past actions are described in Section 4.6. The objective of the proposed action is to reduce Ferry Division operat deficits and thereby defer the need for future Bridge toll or transit fare increases and to improve the financial performance of the ferry system. The principal measures of financial performance are:

- Deficit Per Passenger - the operating deficit incurred by a given segment of the transit operation over a given period of time divided by the number of passengers carried by that segment in the same period.

- Operating Ratio - the proportion of the operating costs of a given period of time which are covered by the operating revenues (which include fares, and concession revenues) of that segment over the same period.

The Board of Directors has adopted a goal that its transit system of buses and ferries which achieve an operating ratio of 50% or higher. The Board has not adopted a goal expressed specifically in terms of deficit per passenger, but routinely reviews this statistic to ensure a fair distribution of limited subsidy funds among components of the transit system.

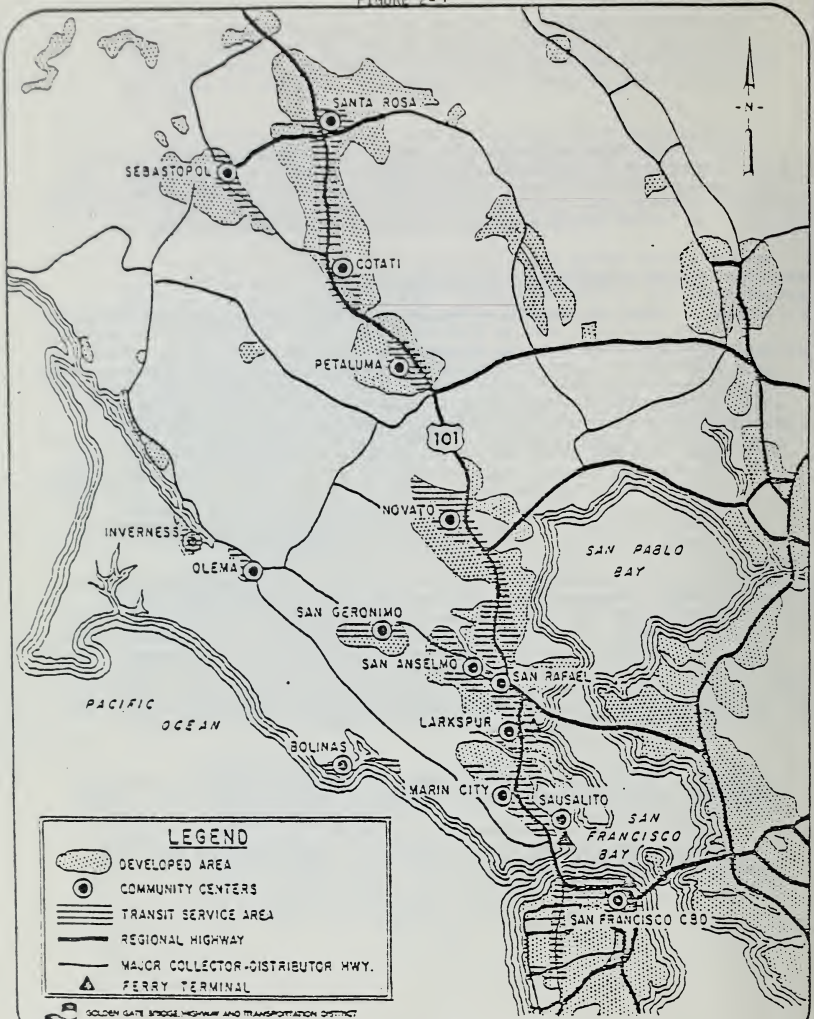
2.4 Characteristics of the Proposed Action

Under the proposed action Larkspur ferry services would at the earliest date consistent with the District's procedures, be reduced to the sailings shown on Table 2-6. Two Alternatives are under consideration. Under Alternative 1, two vessels would sail from Larkspur to San Francisco during the morning commute period, remain in San Francisco during the mid-day and return from San Francisco to Larkspur during the evening commute period. There would be no ferry sailings during the mid-day or on Saturdays, Sundays or public holidays. Under Alternative 2, two vessels would sail to San Francisco in the morning and return to Larkspur in the evening, but during each evening commute period, one of the vessels would make a second round trip to San Francisco and back to Larkspur. As with Alternative 1, there would be no ferry sailing during the mid-day or on Saturdays, Sundays or public holidays. Certain variations to Alternative 2 are also being considered. They are described in Section 5.2

Under both Alternatives, the crossings to San Francisco during the morning commute period, which currently use all three of the ferries' engines and take 40 minutes per crossing, would use two engines and take 45 minutes. The crossings to Larkspur during the evening commute periods, which currently use two engines and take 45 minutes, would use one engine and take 50 minutes. A graphic representation of the ferry schedules of the existing weekday and proposed austere service, including departure and arrival times and number of engines used, is provided in Figure 2-5. A similar representation of certain variations to Alternative 2 is provided in Figure 5-1.

The ferry feeder bus services which connect with the two morning and two evening peak period ferry crossings would be retained. These are the buses which would carry passengers to the Larkspur Terminal for 6:55AM and 7:30AM, and carry passengers from the Terminal at 5:35 PM and 6:10PM. Under either Alternative 1 or Alternative 2, all other ferry feeder bus services would be cancelled.

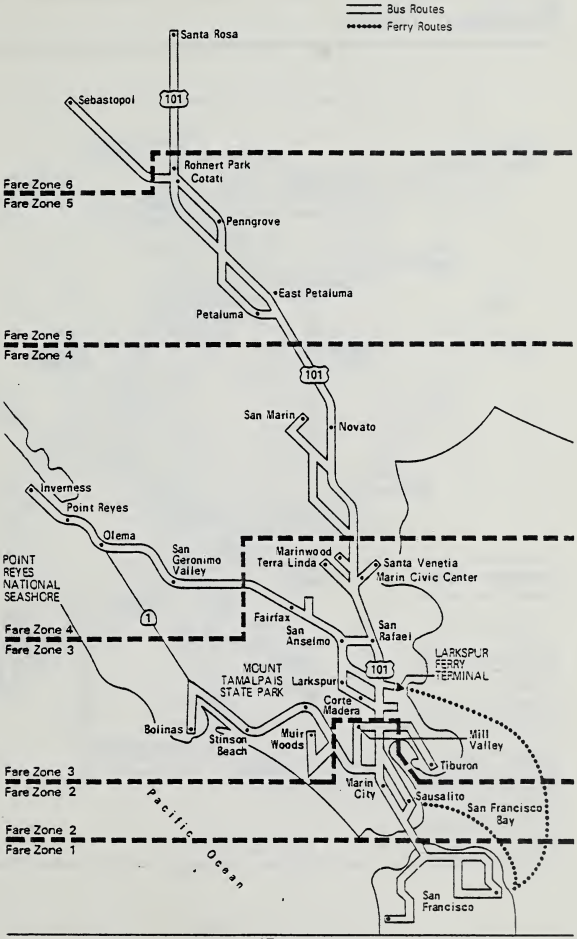
FIGURE 2-1



TRANSIT SERVICE AREA

Figure 2-2

SYSTEM MAP



System Map

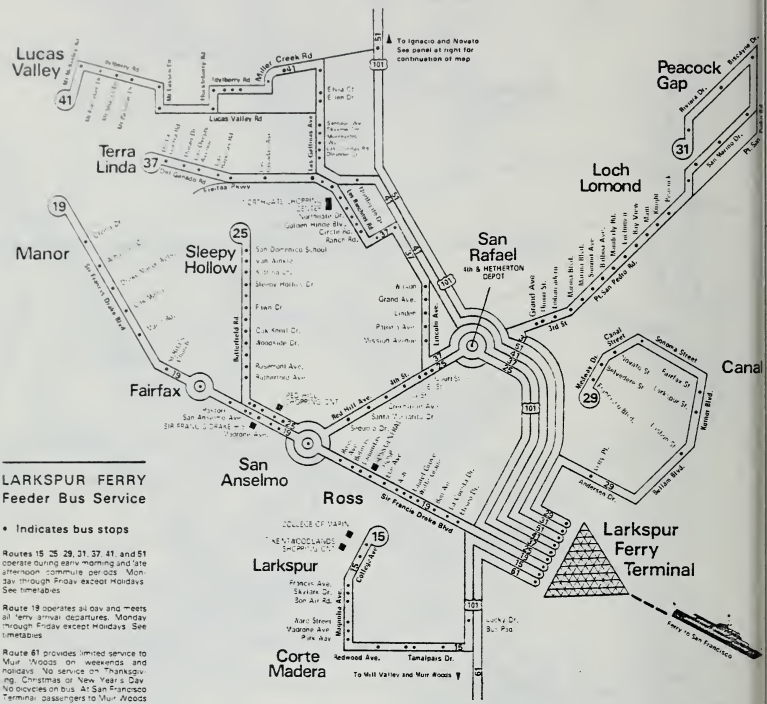
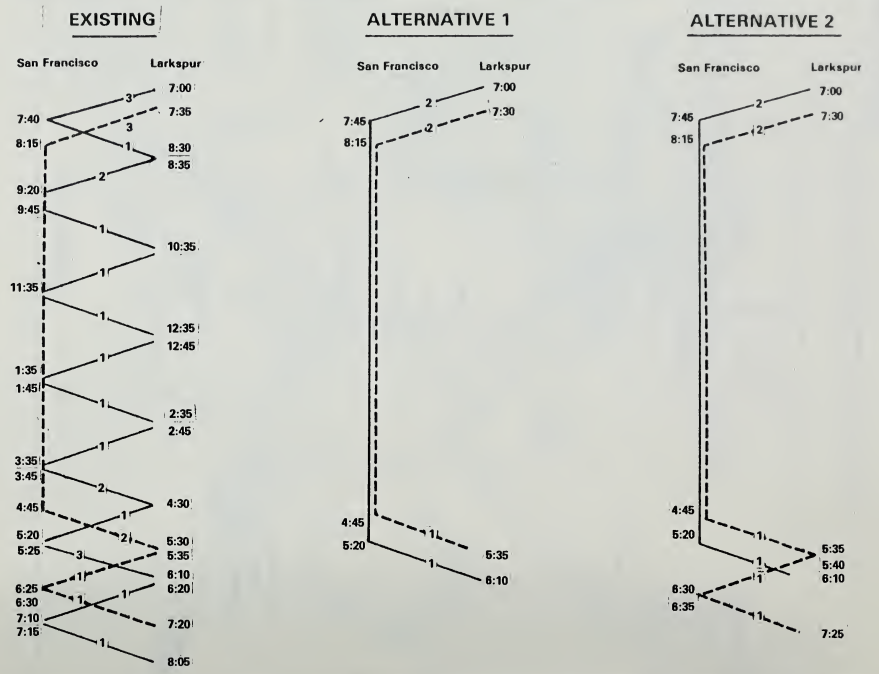

Lucas Valley
Terra Linda
Manor
Sleepy Hollow
Fairfax
San Anselmo
Ross
Larkspur
Corte Madera
Peacock Gap
Loch Lomond
San Rafael
4th & HETHERTON DEPOT
Canal
Larkspur Ferry Terminal
Ferry to San Francisco
To Ignacio and Novato
See panel at right for continuation of map
Miller Creek Rd
Lucas Valley Rd
Ivy Berry Rd
Las Gallinas Ave
Freitas Pkwy
Del Ganado Rd
Los Gamos Dr
Nova Albion Way
Merrydale Rd
Northgate Dr
Northgate Mall
Northgate One
Northgate Two
Nova Albion Way
Nova Albion
Merrydale Rd
Las Gallinas Ave
Freitas Pkwy
Del Ganado Rd
Los Gamos Dr

Figure 2-4
System Map For Larkspur Ferry Feeder Bus Service - Route 51 in Novato

FIGURE 2-5

WEEKDAY LARKSPUR FERRY SCHEDULES FOR EXISTING AND PROPOSED "AUSTERE" SERVICE



Ferry Timetable

Larkspur Ferry

Weekdays (except holidays)

Leave Larkspur Ferry Terminal	Arrive San Francisco Ferry Building	Leave San Francisco Ferry Building	Arrive Larkspur Ferry Terminal
★6 05	★6 40	—	—
7 00	7 40	7 40	8 30
7 35	8 15	—	—
8 35	9 20	9 45	10 35
10 45	11 35	11 45	12 35
12 45	1 35	1 45	2 35
2 45	3 35	3 45	4 30
		4 45	5 30
4 30	5 20	5 25	6 10
5 35	6 25	6 30	7 20
6 20	7 10	7 15	8 05
		%8 01	%8 48

★ via Route 97 bus to San Francisco Financial District
%via Route 70 bus to Larkspur Ferry Terminal

Saturday, Sunday & Holidays

Leave Larkspur Ferry Terminal	Arrive San Francisco Ferry Building	Leave San Francisco Ferry Building	Arrive Larkspur Ferry Terminal
10 50	11 40	11 50	12 40
12 50	1 40	1 50	2 40
2 50	3 40	3 50	4 40
4 50	5 40	5 50	6 40

In order to accomodate shoppers during the November/December holiday/shopping season, service on the Larkspur Ferry is made more frequent than the schedule shown above. Please telephone for information.

Refreshments are served served aboard the ferries.

HOLIDAYS: Washington's Birthday, Memorial, Independence and Labor Day. There is NO FERRY SERVICE on Thanksgiving, Christmas or New Year's Day.

General Information

GOLDEN GATE FERRY — LARKSPUR

The Golden Gate Ferry provides daily service between the Larkspur Ferry Terminal and the San Francisco Ferry Terminal.

SAN FRANCISCO FERRY TERMINAL

The San Francisco Terminal is located in back of the Ferry Building on the Embarcadero at the foot of Market Street. The entrance to the Ferry Terminal is indicated by signs in front of the Ferry Building.

LARKSPUR FERRY TERMINAL

The Larkspur Ferry Terminal is located in Marin County on East Sir Francis Drake Boulevard just east of U.S. Highway 101. The Terminal can be reached by feeder bus or by auto. Free parking is available at the Terminal.

Fares Adult fare, one-way between Larkspur and San Francisco, is $2.00. A discount fare of $1.00 is available to youths (aged 6-12), senior citizens (65 or older with Bay Region Transit Discount Card), and handicapped persons (with Bay Region Transit Discount Card). If a handicapped person is authorized to be accompanied by an attendant (this would be indicated by a "red dot" on handicapped person's ID card), the attendant may travel for the same discount fare as the handicapped person. Blind persons with Bay Region Transit Discount Card (stamped blind) ride free. Children (aged 5 or less) travel free when accompanied by an adult (limit of two children per adult). Commuters can obtain a discount on books of 20 tickets which may be purchased at the ferry terminals.

Feeder Bus Service Feeder bus routes operate between the Larkspur Ferry Terminal and various parts of Marin County as shown on the **System Map** in this pamphlet. Routes 15, 19, 25, 29, 31, 37, 41, and 51 are scheduled to provide direct connections with ferry arrival/departures. There is no charge for feeder bus service ***to*** the Larkspur Ferry Terminal, but a fare of 25¢ is charged for feeder bus service ***from*** the Terminal.

Park-N-Ride Service In addition to ferry service from the Terminal, there is also commute bus service on Route 30 from the Terminal. The Route 30 departs the Terminal for San Francisco at 7:05 am, 7:40 am, and 8:40 am. Commuters wishing to use this bus service may park their cars in the Terminal parking lot. See the **San Rafael Commute Pamphlet** for details.

FOR FURTHER INFORMATION CALL:

332-6600 from San Francisco
453-2100 from Marin County

ALL INFORMATION IS SUBJECT TO CHANGE.

Timetable For Larkspur Ferry Feeder Bus Service - Route Numbers 15, 19 and 25

15 ROUTE 15 to Larkspur Ferry Terminal College of Marin—Larkspur—Corte Madera—Larkspur Ferry Terminal Monday through Friday except Holidays

College of Marin	Larkspur	Corte Madera	Lucky Drive Bus Pad	Larkspur Ferry Terminal	Ferry leaves Larkspur	Ferry arrives S.F. Ferry Bldg.
8 41	8 46	6 52	f	6 57	7 00	7 40
7 15	7 20	7 28	f	7 32	7 35	8 15
8 15	8 20	8 26	f	8 32	8 35	9 20

% There will be no 8:05 a.m. boat departure. Instead, a bus, Route 97 will leave the Larkspur Ferry Terminal at 6:05 a.m. and operate via the San Francisco Financial District route, making all bus stops, arriving at S.F. Ferry Terminal at 6:45 a.m. and Main & Folsom Streets at 6:50 a.m.

15 ROUTE 15 from Larkspur Ferry Terminal Larkspur Ferry Terminal—Corte Madera—Larkspur—College of Marin Monday through Friday except Holidays

Ferry leaves S.F. Ferry Bldg.	Ferry arrives Larkspur	Larkspur Ferry Terminal	Lucky Drive Bus Pad	Corte Madera	Larkspur	College of Marin
3 45	4 30	4 35	f	4 41	4 47	4 52
4 45	5 30	5 36	f	5 41	5 47	5 52
5 25	6 10	6 15	f	6 21	6 27	6 32
6 30	7 20	7 25	f	7 31	7 37	7 42

19 ROUTE 19 to Larkspur Ferry Terminal Manor—Fairfax—San Anselmo—Ross—College of Marin—Greenbrae—Larkspur Ferry Terminal Monday through Friday except Holidays

Manor (Manor & S.F. Drake)	Fairfax (Broadway & Bolinas)	Madrone & S.F. Drake	San Anselmo (Center & S.F. Drake)	Ross	College of Marin	Greenbrae	Larkspur Ferry Terminal		Ferry leaves Larkspur	Ferry arrives S.F. Ferry Bldg.
%5 41	5 45	5 50	5 51	5 55	5 57	6 02	6 05	%	7 00	7 40
8 34	6 38	6 42	6 43	6 47	6 49	6 54	6 57		7 35	8 15
7 06	7 10	7 16	7 17	7 21	7 23	7 29	7 32		8 35	9 20
8 00	8 04	8 11	8 12	8 16	8 19	8 27	8 32			
10 09	10 13	10 19	10 20	10 24	10 26	10 32	10 35		10 45	11 35
12 09	12 13	12 19	12 20	12 24	12 26	12 32	12 35		12 45	1 35
2 09	2 13	2 19	2 20	2 24	2 26	2 32	2 35		2 45	3 35
4 00	4 04	4 10	4 11	4 15	4 17	4 23	4 26		4 30	5 20
5 04	5 08	5 14	5 15	5 19	5 21	5 27	5 30		5 35	6 25
—	—	—	6 00	6 04	6 06	6 12	6 15		6 20	7 10

% This feeder service is operated as Route 22 which goes to the Larkspur Ferry Terminal. It will depart for the terminal at 6:05 am and proceed to San Francisco via the San Francisco Financial District route, making all bus stops, and arriving at S.F. Ferry Terminal at 6:45 a.m. There is no ferry service to San Francisco at 6:05 am.

19 ROUTE 19 from Larkspur Ferry Terminal Larkspur Ferry Terminal—Greenbrae—College of Marin—Ross—San Anselmo—Fairfax—Manor Monday through Friday except Holidays

Ferry leaves S.F. Ferry Bldg.	Ferry arrives Larkspur	Bus leaves Larkspur Ferry Terminal	Greenbrae	College of Marin	Ross	San Anselmo (Center & S.F. Drake)			Madrone & S.F. Drake	Fairfax (Broadway & Bolinas)	Manor (Manor & S.F. Drake)
7 40	8 30	8 35	8 38	8 44	8 46	—	—	—	8 50	8 56	9 00
9 45	10 35	10 40	10 43	10 49	10 51	—	—	—	10 55	11 01	11 05
11 45	12 35	12 40	12 43	12 49	12 51	—	—	—	12 55	1 01	1 05
1 45	2 35	2 40	2 43	2 49	2 51	—	—	—	2 55	3 01	3 05
3 45	4 30	4 35	4 38	4 44	4 46	—	—	—	4 50	4 56	5 00
4 45	5 30	5 35	5 38	5 44	5 46	—	—	—	5 50	5 56	6 00
5 25	6 10	6 15	6 18	6 24	6 26	—	—	—	6 30	6 36	6 40
6 30	7 20	7 25	7 28	7 34	7 36	—	—	—	7 40	7 45	7 50
7 15	8 05	8 10	8 13	8 19	8 21	—	—	—	8 25	8 31	8 35

25 ROUTE 25 to Larkspur Ferry Terminal Sleepy Hollow—Madrone & S.F. Drake—San Rafael (4th & Hetherton)—Larkspur Ferry Terminal Monday through Friday except Holidays

Sleepy Hollow	Madrone & S.F. Drake	San Rafael (4th & Hetherton)	Larkspur Ferry Terminal	Ferry leaves Larkspur	Ferry arrives S.F. Ferry Bldg.
8 29	8 38	6 49	6 57	7 00	7 40
7 59	7 09	7 22	7 32	7 35	8 15
7 59	8 08	8 20	8 32	8 35	9 20

% There will be no 8:05 a.m. boat departure. Instead, a bus, Route 22, will leave the Larkspur Ferry Terminal at 6:05 a.m., and operate via the San Francisco Financial District route, making all bus stops, arriving at S.F. Ferry Terminal at 6:45 a.m.

25 ROUTE 25 from Larkspur Ferry Terminal Larkspur Ferry Terminal—San Rafael (4th & Hetherton)—Madrone & S.F. Drake—Sleepy Hollow Monday through Friday except Holidays

Ferry leaves S.F. Ferry Bldg.	Ferry arrives Larkspur	Larkspur Ferry Terminal	San Rafael (4th & Hetherton)	Madrone & S.F. Drake	Sleepy Hollow
3 45	4 30	4 35	4 43	4 56	5 06
4 45	5 30	5 36	5 43	5 56	6 06
5 25	6 10	6 15	6 22	6 36	6 46
6 30	7 20	7 25	7 33	7 46	7 56

29 ROUTE 29 from Larkspur Ferry Terminal
Larkspur Ferry Terminal—Bellam & Francisco—Canal & Sonoma—Medway & Francisco
Monday through Friday except Holidays

Ferry leaves S.F.Ferry Bldg.	Ferry arrives Larkspur	Larkspur Ferry Terminal	Bellam & Francisco	Canal & Sonoma	Medway & Francisco
3 45	4 30	4 35	4 41	4 44	4 46
4 45	5 30	5 35	5 41	5 44	5 46
5 25	6 10	6 15	6 21	6 24	6 28
6 30	7 20	7 25	7 31	7 34	7 36

29 ROUTE 29 to Larkspur Ferry Terminal
Medway & Francisco—Canal & Sonoma—Bellam & Francisco—Larkspur Ferry Terminal
Monday through Friday except Holidays

Medway & Francisco	Canal & Sonoma	Bellam & Francisco	Larkspur Ferry Terminal	Ferry leaves Larkspur	Ferry arrives S.F.Ferry Bldg
6 46	6 48	6 51	6 57	7 00	7 40
7 21	7 23	7 26	7 32	7 35	8 15
8 21	8 23	8 26	8 32	8 35	9 20

% There will be no 6:05 a.m. boat departure. Instead, a bus, Route 22, will leave Larkspur Ferry Terminal at 6:05 a.m. and operate via the San Francisco Financial District route, making all bus stops, arriving at S.F. Ferry Terminal at 6:45 a.m. and at Main & Folsom Streets at 6:50 a.m.

31 ROUTE 31 to Larkspur Ferry Terminal
Peacock Gap—Larkspur Ferry
Monday through Friday except Holidays

Riviera & Milano	Riviera & Biscayne	Riviera & Lagoon	Knight & Pt. San Pedro	Loch Lomond & Pt. San Pedro	3rd & Grand	Larkspur Ferry Terminal	Ferry leaves Larkspur	Ferry arrives S.F.Ferry Bldg.
6 34	6 36	6 39	6 41	6 43	6 50	6 57	7 00	7 40
7 09	7 11	7 14	7 16	7 18	7 25	7 32	7 35	8 15
8 05	8 07	8 10	8 12	8 14	8 23	8 32	8 35	9 20

% There will be no 6:05 a.m. boat departure. Instead, a bus, Route 22, will leave Larkspur Ferry Terminal at 6:05 a.m. and operate via the San Francisco Financial District route, making all bus stops, arriving at S.F. Ferry Terminal at 6:45 a.m.

31 ROUTE 31 from Larkspur Ferry Terminal
Larkspur Ferry Terminal—Peacock Gap
Monday through Friday except Holidays

Ferry leaves S.F.Ferry Bldg.	Ferry arrives Larkspur	Larkspur Ferry Terminal	2nd & Irwin	Loch Lomond & Pt. San Pedro	Knight & Pt. San Pedro	Riviera & Milano	Riviera & Biscayne	Riviera & Lagoon
3 45	4 30	4 35	4 42	4 51	4 54	4 57	4 59	5 03
4 45	5 30	5 35	5 42	5 51	5 54	5 57	5 59	6 03
5 25	6 10	6 15	6 22	6 31	6 34	6 37	6 39	6 43
6 30	7 20	7 25	7 32	7 41	7 44	7 47	7 49	7 53

37 ROUTE 37 to Larkspur Ferry Terminal
Terra Linda—San Rafael—Northgate Center—Merrydale & N.San Pedro—Lincoln & Wilson—Lincoln & Mission—Larkspur Ferry Terminal
Monday through Friday except Holidays

Terra Linda	Northgate Center	Merrydale & N. San Pedro	Lincoln & Wilson	Lincoln & Mission	Larkspur Ferry Terminal	Ferry leaves Larkspur	Ferry arrives S.F. Ferry Bldg.
6 32	6 39	6 43	6 45	6 48	6 57	7 00	7 40
7 03	7 10	7 14	7 16	7 19	7 32	7 35	8 15
8 07	8 14	8 18	8 20	8 23	8 32	8 35	9 20

%There will be no 6:05 a.m. boat departure. Instead, a bus, Route 37, will leave Larkspur Ferry Terminal at 6:05 a.m. and operate via the San Francisco Financial District route, making all bus stops, arriving at S.F. Ferry Terminal at 6:45 a.m. and at Main & Folsom Streets at 6:50 a.m.

37 ROUTE 37 from Larkspur Ferry Terminal
Larkspur Ferry Terminal—Lincoln & Mission—Lincoln & Wilson—Merrydale & N.San Pedro—Northgate Center—Terra Linda
Monday through Friday except Holidays

Ferry leaves S.F.Ferry Bldg.	Ferry arrives Larkspur	Larkspur Ferry Terminal	4th & Hetherton	Lincoln & Mission	Lincoln & Wilson	Merrydale & N. San Pedro	Northgate Center	Terra Linda
3 45	4 30	4 35	—	4 44	4 47	4 51	4 55	5 02
4 45	5 30	5 35	—	5 44	5 47	5 51	5 55	6 02
5 25	6 10	6 15	—	6 24	6 27	6 30	6 34	6 41
6 30	7 20	7 25	—	7 34	7 37	7 39	7 43	7 50
7 15	8 05	8 10	8 17	8 19	8 22	8 24	8 28	8 35

41

ROUTE 41 to Larkspur Ferry Terminal
Lucas Vallay—Marinwood—
Larkspur Farry Tarminal
Monday through Friday except Holidays

Lucas Valley & Las Gallinas	Mt. McKinley & Idyllberry	Huckleberry & Idyllberry	Las Gallinas & Miller Creek	Las Gallinas & Freitas Pkwy.	Larkspur Ferry Terminal	Ferry leaves Larkspur	Ferry arrives S.F. Ferry Bldg
6 28	6 30	6 35	6 39	6 45	6 57	7 00	7 40
6 57	7 02	7 07	7 12	7 18	7 32	7 35	8 15
8 01	8 05	8 10	8 14	8 20	8 32	8 35	9 20

%There will be no boat departure at 6:05 a.m. Instead, a bus, Route 22 will leave Larkspur Ferry Terminal at 6:05 a.m., and operate via the San Francisco Financial District route, making all bus stops, arriving at S.F. Ferry Terminal at 6:45 a.m.

41

ROUTE 41 from Larkspur Ferry Terminal
Larkspur Ferry Terminal—Marinwood—
Lucas Valley
Monday through Friday except Holidays

Ferry leaves S.F. Ferry Building	Ferry arrives Larkspur	Larkspur Ferry Terminal	Las Gallinas & Freitas	Las Gallinas & Miller Creek	Huckleberry & Idyllberry	Mt. McKinley & Idyllberry	Lucas Valley & Las Gallinas
3 45	4 30	4 35	4 49	4 55	5 00	5 05	5 10
4 45	5 30	5 38	5 49	5 55	6 00	6 05	6 10
5 25	6 10	6 15	6 29	6 35	6 40	6 45	6 50
6 30	7 20	7 29	7 39	7 45	7 50	7 55	8 00

51

ROUTE 51 to Larkspur Ferry Terminal
Novato—Highway 101 Bus Pads—
Larkspur Ferry Terminal
Monday through Friday except Holidays

Novato (Redwood & Grant)	South Novato & Sunset Parkway	Ignacio Bus Pad	Del Prado Bus Pad	Marinwood Bus Pad	Terra Linda Bus Pad	Larkspur Ferry Terminal	Ferry leaves Larkspur	Ferry arrives S.F. Ferry Building
6 27	6 33	6 37	6 38	6 41	6 44	6 57	7 00	7 40
6 56	7 02	7 06	7 07	7 10	7 13	7 32	7 35	8 15

51

ROUTE 51 from Larkspur Ferry Tarminal
Larkspur Farry Tarminal—Highway 101
Bus Pads—Novato
Monday through Friday except Holidays

Ferry leaves S.F. Ferry Building	Ferry arrives Larkspur	Larkspur Ferry Terminal	Terra Linda Bus Pad	Marinwood Bus Pad	Del Prado Bus Pad	Ignacio Bus Pad	South Novato & Sunset Parkway	Novato (Redwood & Grant)
4 45	5 30	5 36	5 49	5 52	5 55	5 56	6 01	6 07
5 25	6 10	6 15	6 29	6 32	6 35	6 36	6 40	6 46

61

ROUTE 61 to Larkspur Ferry Terminal
Muir Woods Visitor Center—
Muir Beach Junction—Tamalpais
Vallay Junction—Larkspur Ferry Tarminal
Saturday, Sunday & Holidays
Except Thanksgiving, Christmas and New Year's Day

Muir Woods Visitor Center	Muir Beach Junction	Tamalpais Valley Junction	Manzanita Parking Lot	Larkspur Ferry Terminal	Ferry leaves Larkspur	Ferry arrives S.F. Ferry Building
1 53	2 03	2 24	2 28	2 40	2 50	3 40
3 53	4 03	4 24	4 28	4 40	4 50	5 40

61

ROUTE 61 from Larkspur Ferry Terminal
Larkspur Ferry Terminal—
Tamalpais Valley Junction—Muir Baach
Junction—Muir Woods Visitor Centar
Saturday, Sunday & Holidays
Except Thanksgiving, Christmas and New Year's Day

Ferry leaves S.F. Ferry Building	Ferry arrives Larkspur	Larkspur Ferry Terminal	Manzanita Parking Lot	Tamalpais Valley Junction	Muir Beach Junction	Muir Woods Visitor Center
11 50	12 40	12 45	12 58	1 01	1 32	1 32
1 50	2 40	2 45	2 58	3 01	3 32	3 32

Table 2-5

PROPOSED TIMETABLE - LARKSPUR FERRY

	Leave Larkspur	Arrive San Francisco	Leave San Francisco	Arrive Larkspur
ALTERNATIVE 1				
Weekdays (except holidays)	7:00AM	7:45AM		
	7:30AM	8:15AM		
			4:45PM	5:35PM
			5:20PM	6:10PM
Weekends and holidays		---- no service ----		
ALTERNATIVE 2				
Weekdays (except holidays)	7:00AM	7:45AM		
	7:30AM	8:15AM		
			4:45PM	5:35PM
			5:20PM	6:10PM
	5:40AM	6:30AM	6:35PM	7:25PM
Weekends and holidays		---- no service ----		

nlm

3.0 ENVIRONMENTAL SETTING

A description of the Golden Gate Bridge, Highway and Transportation District; its organization, historical development and transportation services, is included in Chapter 2 of the District's Five Year Transit Development Plan for Fiscal Years 1980/81 - 1984/85. (Reference 3) Copies of the Plan can be obtained from the Secretary of the District.

3.1 Land Use

The principal cities of the Bay Area's nine-county Region are San Francisco, Oakland, and San Jose. Seventy percent of the Region's 5.1 million population and 80 percent of its economic activity is located on the Bay Plain lands which adjoin the Bay shoreline. The greatest concentration of population is on the lands along the West Bay between San Francisco and San Jose and along the East Bay between San Jose, Oakland and Vallejo. The county-wide distribution of the Bay Area's population and land area is given in Table 3-1.

San Francisco, Oakland and San Jose are the region's principal centers of multi-functional urban activity. San Francisco is the region's dominant retail, trade, administrative, financial and distribution center. Twenty-six percent of the Bay Area's labor force is employed there. Although a majority of the labor force resides outside of San Francisco, residential densities within San Francisco are highest in the Region.

Elsewhere in the Bay Plain exist linear bands of industrial activity along the waterfront and regional sub-centers, including San Mateo, Redwood City and Sunnyvale in the West Bay and Fremont, Hayward and Richmond in the East Bay. Most commercial development, outside of major concentrations in San Francisco and Oakland and lesser concentrations in the CBD's of other cities, is located in strips along major transportation corridors or in clusters around shopping centers. Through the Plain, the high-density residential areas tend to be near major employment centers along the Bay shore while residential density decreases inland.

Suburban development in a number of sub-centers is characteristic of the rest of the Region. Bay Plain population has overflowed into southern Marin County, the Orinda-Walnut Creek-Concord area in Contra Costa County, the Livermore-Amador Valleys and up the Santa Clara Valley. These areas function mostly as bedroom communities to the employment centers of the Bay Plain.

A number of sub-centers, such as Novato, Vallejo and Antioch, have been created beyond the urban core by the location of steel, oil and chemical plants and military installations. Santa

Rosa and Napa function as important sub-regional service centers whose markets and populations are largely independent of the region's central core. Throughout the region's outer areas the cities are usually small and self-contained with diversified economic bases reflecting the influences of geography and local resources. Residential density in these outlying areas tends to be much lower than those of the urban core.

Urbanization in Marin County has been confined primarily to the Bayside valleys and the flatlands adjoining the Bay shores in southern Marin. Hills running perpendicular to the north-south oriented Bolinas Ridge and Marin Mountains act as barriers to contiguous development of the plain lands. The pattern of urbanization is characterized by the existence of physically discrete communities.

A similar situation exists in Sonoma County where the Petaluma-Cotati-Santa Rosa and Sonoma Valleys contain the bulk of urbanization. Agriculture is a more predominant land use in Sonoma and northern Marin. Most cities in these areas are separated by farm and pasture land as well as by topography.

West and northern Marin and much of Sonoma County possess some of the region's most valuable open space, recreational and agricultural resources. The Marin coast is the site of a number of national and state recreational areas such as Point Reyes National Seashore, Muir Woods National Monument, Golden Gate National Recreation Area, Mt. Tamalpais State Park and Stinson Beach. The Sonoma Coast and Russian River areas are popular recreation sites in Sonoma County. Both Marin and Sonoma Counties plan to preserve these natural portions of their environments .

3.2 Population and Employment

Table 3-2 indicates the portion of the population in low income, elderly and racial minority groups for Marin, Sonoma, and San Francisco counties and the nine-county region in 1970. Table 3-3 shows recent estimatesof household income and population by group for the counties for 1979.

Marin County depends considerably upon employment outside of its boundaries. Currently, over 48 percent of Marin's 108,000 resident labor force work outside of Marin. Of these, over 90 percent commute south to San Francisco and beyond. Unlike Marin, about 15 percent of Sonoma's 131,700 labor force work outside of the county (about half of those commute to San Francisco). Unemployment rates in August, 1980 were 4.8 percent in Marin, 8.4 in Sonoma, and 7.8 percent in San Francisco counties. The average unemployment rate for all California metropolitan areas was 7.2 percent.

3.3 Climate and Air Quality

Most of the nine-county San Francisco Bay Area, all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara, Napa, and portions of Solano and Sonoma, comprise the San Francisco Bay Intrastate Air Quality Control Region (AQCR). The maintenance of air quality in the AQCR is the responsibility of the Bay Area Air Quality Management District (BAAQMD).

The San Francisco Bay Area climate is typical of California coastal zones. Most summer days are dry and sunny. Spring weather is variable. Late fall and winter are cool and windy and receive most of the area's moderate rainfall. Wind patterns vary with location, time of day and season (see Figure 3-1). The most frequent daytime pattern is a moderate sea breeze off the coast and Bay. The wind direction frequently reverses to a land breeze in the evening. Air movement and stability are usually dominated by the Pacific high pressure zone. Light winds and downward vertical flow caused by high pressure areas, combined with the topography of the Bay Area, a large shallow basin ringed by hills, can result in a heavy build-up of photochemical smog.

Air quality may be assessed in terms of the concentrations of various pollutants. Air pollutants most commonly measured are (1) carbon-monoxide (CO); (2) oxides of nitrogen (NO_x); (3) oxidant, primarily ozone (O_3); (4) hydrocarbons (HC); (5) sulfur dioxide (SO_2); and (6) particulates. When air quality is expressed in terms of the frequency that certain levels are equaled or exceeded, the levels are based on either state or federal standards.
are summarized in Table 3-4.

Under the weather conditions causing "inversion", pollution may be the heaviest. Inversion is characterized by a cool layer of air trapped below a layer of warm air, a reversal of the atmosphere's normal decrease of temperature with altitude. Summer inversions are caused by downward vertical motion (subsidence) which compresses and heats the air. Winter inversions are formed as air warmed by radiation is cooled as it comes in contact with the earth's cold surface at night. Both types may combine during the fall, resulting in the worst pollution. The inversion prevents pollutants from diluting in the vertical air mass and confines them to air that is breathed.

The inversion and wind speed together determine the total volume of air available to dilute the pollutants. Poor ventilation usually creates a "smog season" during the warm and sunny months from May to October.

Oxidant, a component of photochemical smog, is a by-product of NO_x and HC, formed in the presence of sunlight downwind from the

primary NO_x and HC emissions. Motor vehicles contributed between 34 percent and 44 percent of the precursors of smog in 1971

An area of low average oxidant concentration is centered over San Francisco. Values tend to increase as one goes away from San Francisco northwest toward Sonoma and Napa Valley; northeast through the Carquinez Straight; eastward through Dublin and Niles Canyon and into the Livermore Valley; and southeasterly along the sides of the Bay into the Santa Clara Valley.

Carbon-monoxide typifies primary pollutants that are emitted directly into the atmosphere from motor vehicles. It is most inert so that the observed concentrations represent only the effects of dilution in the atmosphere. Motor vehicles constitute the most important source of CO. Thus, it is not surprising that the highest CO concentrations are in the vicinity of major roadways such as Highway 101, including the San Francisco and Marin County approaches to the Golden Gate Bridge. CO reaches peak levels in the late fall and winter due to surface-based temperature inversions, increased space heating requirements and mobile sources.

According to the Bay Area Air Quality Management District, in 1979 there were no excesses of any sulfur dioxide standard. For carbon monoxide, the one hour Federal standard was never exceeded. The 8 hour standard was exceeded on 21 days in 1979 (compared to 24 days in 1978 and 41 days in 1977). There were no excesses of the state nitrogen dioxide standard in 1979 for the first time in 13 years of continuous monitoring. For only the second time in 18 years, ozone values did not reach Health Advisory/Alert level. There were 15 days exceeding the Federal standard (compared to 34 days in 1978 and only 7 days in the 1977 drought year).

3.4 Energy

This year the U.S. is expected to spend $90 billion on foreign oil, an average of $400 for every person in the country. These expenditures depress the value of the dollar on international markets and push up inflation in the U.S.

In 1978, the U.S. accounted for 21 percent of world petroleum production, but it consumed 36 percent. Petroleum industry forecasts show no increase in U.S. oil production through 1990.

Therefore, to effect a reduction of U.S. dependency on oil imports will require a reduction of U.S. oil consumption. Automobiles account for over 20 percent of U.S. petroleum consumption.

Significant reductions in oil imports can be achieved through conservation measures related to automobile manufacture and use.

Studies have shown that transportation-related energy consumption is influenced by a number of variables:

VEHICLE: Weight, body size and shape, tires (type, size, inflation), engine size (horsepower) and design; accessories, maintenance and repair.

ROADWAY: Distance, gradients, horizontal curvature, speed and speed changes (stops and slowdowns), roadway surface and extensiveness of high-type highway network.

TRAFFIC: Volumes, level of service, composition (automobile, bus, freight-hauling vehicles).

OWNER/OPERATOR: Driving habits, trip purposes, income.

SOCIOECONOMIC: Population, income distribution, age distribution, real costs of capital investment and expenses of vehicle.

LAND USE PATTERNS: Density and development of pattern.

MODAL ALTERNATIVES: Availability of public transportation, provisions for bicycles and pedestrians, railroads, air and water transportation.

WEATHER AND ALTITIDE: Weather effects on speed, effects of altitide on air resistance and engine performance.

PUBLIC POLICY: Taxation and pricing of vehicles, fuel rationing, speed limitations, programs to increase vehicle occupancy, transportation investment programs, energy efficiency standards, and air and noise pollution control programs.

Table 3.8 compares energy efficiency for alternative transportation modes.

The County of Marin is currently considering adopting an Energy Element to their county-wide plan. According to figures prepared by Sedway/Cook, consultants to the county, automobile trips account for 94 percent of the total energy consumed for transportation during an average weekday in Marin County. Figure 3.4 shows total Marin County energy use in 1978 by source. Transportation accounted for 54 percent of total county energy consumption in 1978.

3.5 Golden Gate Bridge and U.S. 101 Highway Travel

Two highways provide the principal connection between San Francisco and the coastal regions of California. California State Route 1 closely follows the Pacific coastline from southern California along the San Francisco Peninsula, across the Golden Gate Bridge and northward along the coastline to Oregon.

While vehicles crossing the Golden Gate Bridge originate from and are destined for all parts of the North American Continent, there is generally a greater use of the facility by vehicles originating from points of closer proximity. The most recent data indicating the distribution of users by place of vehicle registration is shown in Table 3-4. Approximately 75% of the Golden Gate Bridge users reside in four counties of the nine-county Bay Area. Historic trends in Golden Gate Bridge vehicular traffic are illustrated in Figure 3-1.

Morning commute period Bridge traffic into San Francisco has followed a trend similar to that of total Bridge traffic. Table 3-5 shows southbound commute period traffic since the initiation of Golden Gate Transit bus service in FY 71/72. In the years prior to the transit operation, commute period auto traffic increased steadily to the 21,000 level. The commuter shift to transit brought auto traffic down 5% by FY 1973/74. But, by FY 76/77, traffic had risen back to and above 1970 levels and in FY 77/78 broke the 21,000 vehicle mark. The May, 1979 gasoline shortage and subsequent gasoline price increases caused a reduction in traffic in FY 78/79 and again in FY 79/80. However, commute period traffic is projected to increase over 1% per year. Thus,by FY 85/86 morning commute period traffic will be up at the 22,000 level again. Figure 3-2 shows the current distribution of vehicles within the 6 to 10AM commute period.

While traffic and congestion on the Golden Gate Bridge had lessened recently, problems continue to exist on U.S. 101 to the north. Figure 3-3 from a recent Caltrans study of the U.S. 101 corridor shows the locations of traffic congestion southbound on U.S. 101 during the 7-8:30AM peak and northbound during the 4:30-6:30PM peak periods. The southbound traffic bottleneck in San Rafael currently provides a restraint on traffic bound for the Golden Gate Bridge enabling traffic to flow rather smoothly through Southern Marin to the Bridge Toll Plaza. According to the Caltrans study, traffic on U.S. 101 in San Rafael and northward is expected to grown between 18 and 25 percent in the next ten years. Plans to establish high occupancy vehicle lanes through the congested area have been given high priority by Caltrans, the District, County of Marin and other agencies.

3.6 Golden Gate Public Transportation Services

A description of the Golden Gate bus, ferry, and ridesharing systems is given in Section 2.1 of this report. The Golden Gate Transit service area is illustrated in Figure 2-2. A map of the Golden Gate Transit bus and ferry systems is shown in Figure 2-3. In general, Golden Gate Transit provides transbay service between Marin and Sonoma

Counties and San Francisco. Golden Gate Transit buses provide local service to portions of Marin County on a contract basis with the Marin County Transit District. A history of transit patronage is shown in Table 3-6.

The principal components of the regional transit network are illustrated in Figure 3-4. In addition to Golden Gate services, Greyhound and a number of private charter bus companies also serve the north-west bay transportation corridors. Harbor Carriers provides additional ferry service between Marin and San Francisco counties. Golden Gate passengers traveling to San Francisco can conveniently transfer to the other transit operators in the region: San Francisco Municipal Railway (MUNI), Alameda-Contra Costa Transit (AC Transit), San Francisco Bay Area Rapid Transit (BART) and San Mateo County Transit (SamTrans).

Tables 3-7 and 3-8 show the levels of transit and auto usage during the 6-10AM commute period into San Francisco over the past 5 years. Last year over 43 percent of the 40,000 daily commuters used public transit or carpooled into San Francisco. Nearly 80 percent of total transit seating capacity between 6-10AM is being utilized. During the peak hours (7-9AM) transit passengers use over 90 percent of available seating capacity (about 7,500 out of 8,000 available bus seats and about 1,000 out of 1,400 ferry seats). Most Golden Gate Transit buses are currently overcrowded (standing room only) in the peak hour. In contrast, only 7 percent of peak period autos have 3 or more occupants. An additional 21,000 persons could commute in carpools during the 7-9AM peak if all the single and double occupant autos carried one or two more passengers.

3.7 Transbay Traveler Characteristics

Socioeconomic characteristics of these transbay travelers are presented in Tables 3-4, 3-10, and 3-11.

The April 1980 "Single Occupancy Driver and Ferry Rider Attitudinal Survey" conducted by ADF Research provides information on the single occupant auto traveler's need to commute by automobile. In response to the question, "Do you need your car for work?", 50 percent of drivers said "Yes." Of these 50 percent, 27 percent said yes because they made sales calls or visited clients, 8 percent said they needed a car to get to job sites or carry tools, and 5 percent needed their car for pickups or deliveries. However, when asked the question, "Why don't you use bus or ferry?", only 26 percent of drivers responded, "Need car for work," and another 6 percent said, "Need flexibility of car." Also, when asked to give their occupation, only 10 percent were in sales, 3 percent were consultants and 5 percent were craftsmen. No one reported a delivery/pickup related job. Therefore, it appears that between 25 and 35 percent of single occupant auto commuters presently require their cars for work.

In general, the typical person commuting transbay in a single occupant auto or on the ferry or by bus have some similar characteristics. They are between the ages of 25 and 44, male, live in Marin County and have a household income of between $25,000 and $35,000 (in 1980 dollars). Auto commuters as a group have higher incomes than transit commuters.

3.8 GGBHTD Fiscal Characteristics

The District's expenses are incurred from the normal operation of its four divisions: Bridge, Bus, Ferry and Ridesharing; from the maintenance of its facilities and equipment, e.g., Bridge painting and bus and ferry maintenance; from capital purchases, e.g., ferry vessel parts, new buses and Bridge deck replacement; and from the administration and management of the District's employees property, plant and equipment. The District expended $34,112,000 for operations and maintenance in FY 79/80, up 4.6% from FY 78/79. This modest increase in expenditures reflects the District's efforts to hold down its expenses through efficient operation.

The District's revenues are generated primarily from the District's direct sources. Operating revenues consist of tolls from vehicles crossing the Golden Gate Bridge into San Francisco, fares from transit passengers, concessions from food and beverage sales on the ferries, concessions from advertising on District properties, and miscellaneous fees collected. Income is also derived from short term investments of District reserve monies. In FY 79/80, these local revenues accounted for over 84% of total District revenue.

The remainder of the District's revenues come from local and non-local sources outside of the District's control. It is District policy to exploit outside funding sources to maximum extent possible.

In FY 79/80, the District received $4 million of State SB 325 Transportation Development Act (TDA) funds. These funds are derived from the state sales tax (1/4% of the 6% tax) and allocated to the counties for transit and highways. The District receives portions of the monies allocated to Sonoma, Marin and San Francisco. The portion is determined by MTC on the basis of claims filed by eligible applicants within each county.

The District received $0.5 million to cover fuel price increases from a relatively new state funding source called SB 620 State Transit Assistance (STA), in FY 79/80. STA funds are allocated to the region and then distributed by MTC. The STA funds are available only through FY 81/82. The funds are primarily for capital projects.

Federal funds are available for transit from Sections 3,5,6,8,10, and 18 of the Urban Mass Transportation Act (UMTA) of 1964, as amended. The District receives operating assistance annually through Section 5. Section 5 monies are allocated to the SF/Oakland and Santa Rosa urbanized areas by a formula based on population. The District applies to the state for the Santa Rosa funds and to MTC for the San Francisco funds. The District received $1.35 million of Section 5 operating funds in FY 79/80. All other UMTA funds are awarded at the discretion of the Urban Mass Transportation Administration with the recommendation of MTC and the state.

The revised UMTA 1981 authorization bill, to be sent to Congress, restructures the Section 5 formula grant program to phase out operating subsidies by 1985. If this bill passes, the District will expect to lose $3 million of previously anticipated Federal Transit Operating Assistance Funds by 1985.

Federal funds for transit are also available through the Federal Highway Administration's (FHWA) Federal Aid Urban (FAU) program. These funds are allocated to the counties and distributed by county committee. Though varying from county to county, most FAU monies are used for highway purposes. Within recent years, more money has been made available for transit use, but it is restricted to capital projects. The funds are administered by Caltrans.

3.9 Water Quality

The dominant bodies of water in the region are the Pacific Ocean and the San Francisco Bay. A number of rivers, streams and creeks empty into the Ocean and Bay. The Bay has an effect on the Region's climate, wildlife and fish habitats, and recreation. Most of the water used for human consumption comes from reservoirs and from wells.

There are three state-established regional agencies in the Bay Area that have direct control over the factors that influence water quality. The Bay Conservation and Development Commission (BCDC) has jurisdiction over the San Francisco Bay and its shoreline (100 feet inland from the line of highest tidal action). The Central and North Central Coastal Zone Commissions have jurisdiction over the Pacific Ocean and its shoreline area from the seaward limits of the state to 1,000 yeards landward from the mean high tide line. The California Regional Water Quality Control Board (San Francisco Bay and North Coast Regions) is responsible for water quality control and the establishment of discharge requirements.

3.10 Local and Regional Plans and Policies

The County of Sonoma recently adopted a Five Year Public Transportation Plan. The following goals are contained in the Plan:

- Develop a countywide system of public transportation services that provides for the travel needs of Sonoma County residents, with initial priority given to the unmet needs of the elderly, handicapped and transit dependent residents.

- Develop a cost-effective and efficient combination of public transportation alternatives to the single-occupant automobile.

- Maximize coordination among local and inter-city transit and special elderly/handicapped paratransit services.

- Develop a countywide system of transportation services incrementally, on the basis of a careful and continuous evaluation of the demonstrated effectiveness of a variety of different services.

- Develop a public transportation that supports the goals and policies of the General Plans of the Cities and Sonoma County.

- Provide the general public (particularly elderly, handicapped and transit dependent individuals) with a level of public transportation services that assures reasonable and adequate access to major trip destinations.

- To minimize the need for long distance inter-county travel, particularly work trips, by guiding the development of a self-sufficient county having balanced service facilities, employment, and housing.

- To develop a public transportation system compatible with the environment, promoting the aesthetic beauty of the region, and avoiding undesirable environmental changes.

- To develop a public transportation system that is financially, politically, and legally feasible having community support and a commitment by elected officials to provide services.

- Conserve energy in the County through increased public transportation ridership, ridesharing, bicycling, and pedestrian travel.

- Maximize the utilization of volunteer services whenever possible in the delivery of paratransit services.

The County of Marin is currently in the process of updating its Countywide Plan. Major Transportation Policy recommendations contained in the third draft of the Countywide Plan revision are as follows:

A-1 The majority of transportation program expenditures should be restricted to the most energy-efficient modes of transportation such as high occupancy vehicle (HOV) programs, transit services, and bicycle and pedestrian facilities.

A-2 Local governments should find ways to encourage people to use more energy-efficient transportation such as: preferential parking for carpools and vanpools, safe bicycle routes, park-and-ride lots for commuters, etc.

A-3 Private developers and employers and large public employers, such as county government and school districts, should explore programs such as: vanpools, carpools, subscription bus service, staggered or flex-time work hours,transit use incentives for employees, provision of shower facilities for employees who bicycle or jog to work, etc.

B-1 The scale, location, and pace of development of transportation services should support the Plan's goals of controlled growth, economic self-sufficiency, and high quality natural environment.

B-2 Energy-efficient modes of transportation should be expanded to accommodate the travel demands projected under existing local development plans. Freeway and local street expansion for single occupant vehicles is not recommended.

C-1 Reduction in the use of the single occupant automobile should be encouraged by increasing use of high-occupancy vehicles (carpools and vanpools), public transit, and non-motorized modes such as bicycles and walking.

C-2 Increased use of carpools should be encouraged with a goal of 100% expansion for local travel and 50% expansion for transbay trips from the rates found in 1980.

C-3 Public transit should be expanded by one-third for transbay travel and in accord with the Local Transit Services Plan prepared by the Marin County Transit District in fall 1979 for local transit.

D-1 Most bottlenecks on Highway 101 should be relieved over the 20 year planning period. Because of funding and energy limits, bottlenecks should be relieved first for energy-efficient, high occupancy vehicle (HOV) modes and as a second priority for single occupant vehicles if sufficient funding can be made available.

D-2 A system to permit energy-efficient HOV traffic to bypass the most congested portions of Highway 101, including direct access for HOV traffic to local job centers, should be first priority for the development of Highway 101.

D-3 Because of limited funding programs, minimum cost methods, such as restriping to sub-standard lane widths, should be used whenever possible to gain added pavement needed for HOV traffic.

D-4 The automobile capacity of the Golden Gate Bridge should be maintained at the existing levels.

D-5 The Northwestern Pacific Railroad right-of-way or an equivalent parallel route should be preserved for ultimate use as a transportation corridor.

D-6 The existing Golden Gate Transit bus fleet should be expanded and the ferry system should be aggressively marketed with the intent of increasing ridership during the commute period. If, after a reasonable time period, the ferry service is not able to meet the desired passenger levels, consideration should be given to abandoning the ferry system in favor of added bus service.

The proposed plan revision suggests several approaches to financing needed HOV and transit improvements, one of which is to:

"Charge the users of systems a greater share of the costs when expansion is needed. For example, the costs of transporting people across the Golden Gate should be borne by those using the crossing. The Golden Gate Bridge District should consider increasing tolls for single occupant vehicles both to encourage energy conservation and to fund expansion of transit, carpool, and vanpool programs."

The San Francisco County and City Transportation Element of the General Plan contains the following policies pertaining to the Golden Gate Corridor:

Policy 1: Build and maintain rapid transit lines from downtown to all suburban corridors and major centers of activity in San Francisco.

Policy 2: Where significant, transit service as provided by buses, bridges, and freeways should have exclusive bus lanes.

Policy 3: Provide transit service from residential areas to major employment centers outside the downtown area.

Policy 4: Continue ferries and other forms of water-based transportation as an alternative mode of travel between San Francisco and the North Bay.

Regional policies pertinent to the area's transportation systems are contained in the Regional Transportation Plan (RTP) developed by the Metropolitan Transportation Commission (MTC). The 1979 RTP includes the following transportation system objectives and policies:

OBJECTIVE A:

Transportation programs shall consist of well-coordinated multimodal systems to meet demonstrated travel demand which is consistent with policies of other regional agencies.

OBJECTIVE B:

Transportation programs will be designed to reduce dependence on the automobile as a transportation mode.

OBJECTIVE C:

More efficient use of existing transportation facilities shall be explored as an alternative to construction of new facilities.

A multimodal transportation system preserves a wider range of choice and satisfies a larger number of transportation needs than a single mode. In order to achieve a truly balanced multimodal system it is necessary to give added emphasis to developing the transit mode as a real alternative. This requires special consideration of facilities

and programs that are directed toward narrowing the existing gap between the availability of choice of travel mode between transit and personal auto.

POLICY 1.1

MTC shall emphasize the development of public transit to provide a level of mobility within this mode that is more reasonable comparable to that afforded by the privately owned automobile.

POLICY 1.7

Transit shall meet peak-hour travel demands to major activity centers, assuring reasonable comfort and convenience.

POLICY 1.8

Transportation programs shall support equal opportunity for all residents to have economical access to jobs, social services and recreational activities.

A major problem presently confronting core areas of the Region is congestion from automobile use. The convenience of driving an automobile, coupled with the decline of transit services, has caused greater reliance on the automobile. Transit must be made more attractive and convenient so that automobiles will be relatively less attractive for use in core areas; this will facilitate movement of pedestrians and goods. In addition to transit improvements, some incentives geared toward discouraging automobile use must be instituted so that auto-dominance is reduced within these congested areas.

POLICY 1.19

Changes in working patterns (such as adoption of staggered or flexible working hours) shall be encouraged in order to reduce peak hour travel demands by spreading them over a broader time base.

TABLE 3-1

SAN FRANCISCO BAY AREA POPULATION AND LAND AREA

County	Population 1980	% of Bay Area Population	Area (mi^2)	% of Bay Area Land	Population Density ($Persons/Mi^2$)
Alameda	1,098,500	21.7	726	10.4	1,500
Contra Costa	645,300	12.7	751	10.8	900
Marin	225,200	4.4	511	7.3	400
Napa	93,400	1.8	743	10.7	700
San Francisco	642,900	12.7	47	.7	13,700
San Mateo	589,200	11.6	448	6.4	1,300
Santa Clara	1,265,200	25.0	1326	19.1	1,000
Solano	225,500	4.4	826	11.9	300
Sonoma	284,400	5.6	1575	22.7	200
Bay Area TOTAL	5,069,600	100.0	6953	100.0	729

Source: Population: California State Department of Finance Estimates for January, 1980.
Land Area: Bay Area Transportation Report, Bay Area Transportation Study Commission, May, 1979.

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TABLE 3-2

DISTRIBUTION OF POOR, ELDERLY AND MINORITIES

Group	SF Bay Area 9-County Region	San Francisco	Marin	Sonoma
Racial Minorities				
Spanish-Surname	13%	14%	6%	7%
Black	8%	13%	2%	1%
Asian	5%	13%	1%	1%
Persons 65 & Older	8.9%	13.9%	8.7%	12.9%
Percent of Households with Incomes Below Poverty Level ($3,700 for a non-farm family of 4)	9.4%	14.6%	9.2%	15.8%

Source: 1970 Census of Population

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TABLE 3-3

POPULATION, INCOME AND AGE

	1979 Figures	Countywide		
	SF/Oakland Metro Area	SF	Marin	Sonoma
Population	3,222,700	647,000	226,000	282,500
Households	1,311,100	315,500	87,600	108,700
Median Household (HH) Effective Buying Income (EBI)	$20,827	$16,518	$24,844	$17,078
% HHs with EBI				
under $8,000	17.5%	23.8%	12.2%	25.6%
$8,000-$9,999	4.3%	5.5%	3.4%	5.6%
$10,000-14,999	12.1%	15.9%	10.0%	13.2%
$15,000-24,999	28.0%	26.6%	24.9%	28.4%
$25,000+	38.1%	28.2%	49.5%	27.2%
Median Age	31.8	34.4	32.4	32.3
% Population in Age Group				
18 under	23.8%	17.8%	23.9%	27.0%
18-24	13.9%	14.9%	11.3%	11.9%
25-34	18.1%	18.5%	20.0%	15.3%
35-49	17.7%	15.8%	20.6%	15.4%
50+	26.5%	33.0%	24.2%	30.4%

Effective Buying Income (EBI) = total income (wages, dividends investments...) minus personal taxes minus nontax payments (fines, fees, etc.) and is also known as "disposable"income.

Source: Sales and Marketing Management, 1980 Survey of Buying Power, July 28, 1980.

TABLE 3-4

DISTRIBUTION OF GOLDEN GATE BRIDGE USERS BY COUNTY OF VEHICLE REGISTRATION

Commute Period 7-9AM	Marin	Sonoma	San Francisco	San Mateo	Other California	Out of State
January 1979	63%	6%	11%	3%	11%	6%
April 1979	67%	6%	13%	3%	6%	5%
July 1979	55%	8%	12%	5%	14%	6%
October 1979	62%	6%	14%	3%	11%	4%
All Day & Night *						
January 1979	38%	8%	20%	7%	18%	9%
April 1979	41%	8%	19%	9%	16%	7%
July 1979	34%	8%	20%	10%	21%	7%
October 1979	38%	8%	19%	10%	17%	8%

* 7 day week

Source: GGBHTD License Plate Surveys
County of Registration from California Department of Motor Vehicles

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TABLE 3-5

GOLDEN GATE BRIDGE TRAFFIC - FISCAL YEAR 1971-72 ------- 1979-80

TRANSBAY SOUTHBOUND 6-10 AM WEEKDAYS

(DAILY AVERAGE)

Fiscal Year	Vehicle Traffic	Increase (Decrease)	
		From Prev. Year	From FY 1971/
1971-1972	19,985	-	-
1972-1973	19,911	(0.4)	(0.4)
1973-1974	19,199	(3.6)	(4.9)
1974-1975	19,485	1.5	(2.5)
1975-1976	19,804*	1.6	(9.0)
1976-1977	20,613	4.1	3.1
1977-1978	21,013	1.9	5.1
1978-1979	20,634	(1.8)	3.2
1979-1980	20,113	(2.5)	.6
1980-1981	21,018**	4.5	5.2

*Adjusted for bus strike (including strike, the average equals 20,397)

** Average of September, October counts

Source: Monthly Statistical Summary, Average Daily & Hourly Traffic Volumes, Golden Gate Bridge Traffic - Southbound, FY 1971-72 through 1978-79. FY 1979-80 from twice monthly Southbound counts at the Bridge.

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TABLE 3-6

DISTRICT TRANSIT PATRONAGE

(Thousands of Riders)

FISCAL YEAR	GGT BUS BASIC	GGT BUS LOCAL	GGT BUS COMMUTE	GG FERRY	TOTAL
1973-74	2,849	1,748	3,737	1,061	9,395
1974-75	3,411	1,649	3,593	1,087	9,740
1975-76[1]	2,834	1,589	3,467	1,104	8,994
1976-77[2]	3,715	1,711	3,864	1,709	10,999
1977-78	3,844	1,859	3,766	2,141	11,610
1978-79	4,020	1,724	3,927	2,060	11,731
1979-80	4,397	1,788	4,236	1,117[3]	11,538
1980-81[4]	4,837	1,967	4,660	2,057	13,520

Notes: 1 = Bus Transit Strike (4-12-76 through 6-14-76)
2 = Larkspur Ferry Service Started 12-11-77
3 = Ferry Strike (7-6-79 through 10-21-79)
4 = Projection for FY 80/81

Source: Bus Transit Deficit Reports & Ferry Patronage Counts, GGBHTD

Definition of Services:

Basic - Buses operating all day, seven days a week, on transbay routes to San Francisco Civic Center and buses operating on weekend recreational routes to West Marin.

Local - Buses operating entirely within Marin County under contract with Marin County Transit District.

Commuter - Direct Service to and from San Francisco CBD and Civic Center during commute hours only.

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TABLE 3-7

PERSON TRIPS BY MODE - FISCAL YEARS 1975-76 THROUGH 1979-80 TRANSBAY SOUTHBOUND 6-10AM

(ESTIMATED DAILY AVERAGE)

	PERSON TRIPS					PERCENT OF ALL PERSON TRIPS				
	1975-76	1976-77	1977-78	1978-79	1979-80	1975-76	1976-77	1977-78	1978-79	1979-80
MODE										
Highway										
Private auto										
- 1 & 2 occupants	22909	23271	23445	23052	22729	62.8	60.7	59.5	58.2	56.7
- 3 +(carpool or vanpool)	3642	4648	5285	5211	5059	10.0	12.1	13.4	13.2	12.6
Bus										
- GG Transit	8724	8206	8528	8642	9533	23.9	21.4	21.6	21.8	23.8
- Club Bus	514	524	563	763	765	1.4	1.3	1.4	1.9	1.9
- Other	NA	NA	NA	235	289	NA	NA	NA	.6	.7
Water										
Ferry										
-Larkspur	0	1012	963	1101	942	0	2.6	2.4	2.8	2.3
-Sausalito	248	190	154	145	280	.7	.5	.4	.4	.7
-Tiburon	423*	465*	489	464	507	1.2	1.2	1.2	1.2	1.3
Transit Total	9909	10397	10697	11350	12316	27.2	27.1	27.1	28.7	30.7
- Transit plus carpools & vanpools	13551	15045	15982	16561	17375	37.2	39.2	40.5	41.8	43.3
TOTAL	36460	38316	39427	39613	40104	100.0	100.0	100.0	100.0	100.0

* Estimated

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Sources: FY 1977-78 to present from twice-monthly 6-10AM Southbound person trip count of the bridge.
Other automobile person trips from twice-monthly Southbound counts. Other bus person trips from Bus occupancy counts, ferry person trips, Golden Gate Ferry. All data are for periods of normal operations; data from strike periods are excluded. Data for 1976-77 are based on the period after all three ferries were in full operation.

TABLE 3-8

TRANSIT SERVICE AND USAGE BY COUNTY FY 75/76 THROUGH 79/80

TRANSBAY SOUTHBOUND 6-10AM WEEKDAYS

DAILY AVERAGES

	FROM MARIN					FROM SONOMA					ALL TRAFFIC				
	75/76	76/77	77/78	78/79	79/80	75/76	76/77	77/78	78/79	79/80	75/76	76/77	77/78	78/79	79/80
Transbay Person Trips															
All Modes	25515	26109	26590	26493	26224	3484	4276	4502	4326	4356	36460	38316	39427	39613	40104
Transit	8257	8576	8777	9422	10330	1652	1791	1859	1867	1911	9909	10397	10697	11350	12316
Number of Transit Trips															
Bus															
-GGTransit	189	185	185	185	209	42	44	45	45	45	231	229	230	230	254
-Club Bus	10	8	7	7	8	8	8	13	14	11	18	16	22	23	21
-Other	NA	NA	9	10	NA	NA	NA	0	0	NA	NA	NA	9	10	11*
Ferry															
-Larkspur	0	5	4	4	4	0	0	0	0	0	0	5	4	4	4
-Sausalito	2	2	2	2	2	0	0	0	0	0	2	2	2	2	2
-Tiburon	3	3	3	3	3	0	0	0	0	0	3	3	3	3	3
Number of Seats															
Bus															
-GGTransit	8489	8309	8313	8313	9385	1890	1980	2025	2025	2025	10379	10289	10338	10338	11410
-Club Bus	406	338	280	308	346	330	335	520	616	481	736	673	876	1000	921
-Other	NA	NA	270	350	NA	NA	NA	0	0	NA	NA	NA	270	350	358*
Ferry															
-Larkspur	0	2545	2036	2036	2036	0	0	0	0	0	0	2545	2036	2036	2036
-Sausalito	792	792	792	792	792	0	0	0	0	0	792	792	792	792	792
-Tiburon	1430	1430	1430	1430	1430	0	0	0	0	0	1430	1430	1430	1430	1430

* = Estimated

All data are for periods of normal operations; data from strike periods are not included. Data for FY 76-77 are based on the period after the three ferries were in full operation.

Sources: Person trips from monthly counts of persons crossing the Bridge and from daily Ferry Logs Breakdown by county of residence from Deficit Reports and License Plate Surveys. Number of Golden Gate Transit trips for schedules. Seats per trip from Bus and Ferry operating personnel. Tiburon ferry trips and seats per trip from Harbor Carriers. Club Bus trips and seats from Ridesharing Division.

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TABLE 3-9

CHARACTERISTICS OF SINGLE OCCUPANT AUTOMOBILE COMMUTERS ON THE GOLDEN GATE BRIDGE

Demographic Characteristics of Drivers
Age, Income and Sex

Age	Drivers
18 - 24	4%
25 - 34	21%
35 - 44	32%
45 - 54	22%
55 - 64	18%
65 and over	2%
Income	
Under $15,000	7%
$15,000 - $24,000	16%
$25,000 - $35,000	22%
Over $35,000	46%
Male	67%
Female	33%

Major Occupational Categories of Drivers
Job Title/Position

Job Title, Position	Drivers
Salesman	10%
Doctor, Psychologist	7%
Teacher, Instructor	6%
Manager	6%
Craftsman	5%
Officer	5%
Owner, Proprietor	5%
Administrator, Director	4%
Engineer	4%
Secretary, Receptionist	4%
Supervisor, Foreman	4%
Clerical	3%
Consultant	3%
Nurse	3%
Entertainment, Arts	3%
Account Executive	1%
Analyst	1%
Lawyer	2%
Personnel	2%
Programmer	*
Accountant	2%

Commute Live In

Community	Drivers
San Rafael	21%
Mill Valley	19%
Novato	11%
Sausalito	8%
Tiburon	8%
San Anselmo	5%
Corte Madera	5%
Greenbrae	3%
Kentfield	3%
Fairfax	3%
Larkspur	2%
Marinwood	2%
Lucas Valley	2%
Ross	1%

Car Ownership or Lease

		Own or Lease Car	Company Provides Car
All Drivers	(Base)		
All Drivers	(500)	95%	5
Car Use			
Need for job	(250)	93%	7
Do not	(218)	98%	2
Age			
Under 35	(122)	97%	3
35 - 44	(162)	96%	5
45+	(215)	95%	6
Income			
Under $35,000	(226)	98%	3
$35,000 or over	(231)	94%	6
Sex			
Male	(334)	94%	7
Female	(166)	99%	1

Source - ADF Research Single Occupancy Driver and Ferry Rider Attitudinal Survey April, 1980

* Less than 1/2 of one percent - based on sample of 500 auto drivers

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AGE AND SEX OF FERRY PASSENGERS

	SAUSALITO				LARKSPUR			
	AM Commute	PM Commute	Weekday Non Commute	Weekend	AM Commute	PM Commute	Weekday Non Commute	Weekend
Age								
14 or under	-	1.3	2.1	2.0	1.7	3.0	7.1	6.9
15 - 19	-	4.5	6.3	5.9	3.5	4.8	7.4	8.3
20 - 24	8.9	14.7	11.3	16.6	8.0	11.9	8.0	11.5
25 - 44	64.3	58.3	48.3	50.5	56.3	50.1	38.4	42.2
45 - 59	17.9	16.7	18.7	17.9	25.1	24.1	18.2	18.7
60 - 64	7.1	3.8	5.3	3.9	3.1	1.7	6.1	4.9
65 or over	1.8	0.6	7.9	3.2	2.3	4.3	14.9	7.5
TOTAL	100.0	99.9	99.9	100.0	100.0	99.9	100.1	100.0
Sample Size	56	156	945	1066	1062	461	1629	1528
Sex								
Male	69.1	56.2	43.0	46.3	66.3	60.5	42.1	43.5
Female	30.9	43.8	57.0	53.7	33.7	39.5	57.9	56.5
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Sample Size	55	153	924	1019	1050	458	1620	1494

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TABLE 3-11

INCOME AND AUTO OWNERSHIP OF FERRY PASSENGERS

	SAUSALITO				LARKSPUR			
	AM Commute	PM Commute	Weekday Non Commute	Weekend	AM Commute	PM Commute	Weekday Non Commute	Weeken
Number of Autos in Household								
None	16.1	9.7	10.8	11.2	2.5	4.6	6.7	12.9
One	46.4	39.0	38.5	31.8	38.5	39.0	33.6	30.3
Two	30.4	39.0	34.6	36.8	45.0	43.6	42.3	38.9
Three of more	7.1	12.3	16.1	20.2	14.1	12.8	17.4	17.9
TOTAL	100.0	100.0	100.0	100.0	100.1	100.0	100.0	100.0
Sample Size	56	154	934	1058	1060	461	1605	1495
Annual Household Income								
Less than $4,000	1.9	5.5	6.0	6.8	1.7	6.2	5.4	7.9
$4,000 to $9,999	7.7	8.3	12.2	13.9	6.9	9.6	11.9	11.8
$10,000 to $14,999	15.4	20.7	15.4	13.9	10.1	12.7	13.8	15.6
$15,000 to $19,999	9.6	10.3	17.4	13.1	12.3	10.8	13.8	15.4
$20,000 to $24,999	9.6	13.1	14.1	16.1	15.1	14.6	15.8	15.4
$25,000 to $34,999	25.0	17.2	14.9	14.7	26.5	25.2	18.9	15.8
#35,000 to $49,999	17.3	14.5	12.2	10.4	17.3	11.5	10.4	10.9
$50,000 or more	13.5	10.3	7.9	11.2	10.0	9.4	10.0	7.1
TOTAL	100.0	99.9	100.1	100.1	99.9	100.0	100.0	99.9
Sample Size	52	145	781	902	977	417	1264	1192

Source: GGBHTD, 1977 Ferry Passenger Survey, Office of Planning & Policy Analysis

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TABLE 3-12

SOCIO-ECONOMIC COMPARISON OF BUS PATRONS

BY TRIP TYPE

Age	Sonoma Local	Marin Local	Sonoma/Marin	Sonoma/S.F.	Marin/S.F.
14 or under	2.8	20.3	9.3	.3	1.6
15 - 19	36.5	34.1	24.6	4.1	5.6
20 - 24	17.4	14.2	21.2	8.7	12.3
25 - 44	28.7	19.0	33.9	49.5	49.6
45 - 59	7.8	5.5	6.8	28.2	22.2
60 - 64	2.1	1.3	1.7	5.4	4.0
65 or over	4.6	5.6	2.5	3.8	4.7
TOTAL	99.9	100.0	100.0	100.0	100.0
Sample Size	282	2381	118	390	2520
Income					
Less than $4,000	24.8	19.7	23.1	4.6	6.8
$4,000 to $9,999	28.1	21.4	13.2	11.1	12.7
$10,000 to $14,999	10.3	15.1	12.1	17.6	14.1
$15,000 to $19,999	12.8	10.7	12.1	21.2	12.3
$20,000 to $24,999	7.9	10.5	11.0	14.3	13.2
$25,000 to $34,999	6.6	9.3	15.4	20.5	20.0
$35,000 to $49,999	5.8	5.4	8.8	8.1	13.7
$50,000 or more	3.7	7.9	4.4	2.6	7.3
TOTAL	100.0	100.0	100.1	100.0	100.1
Sample Size	242	1486	91	307	2265

nlm Source: 1977 and 1978 Bus Passenger Surveys, Office of Planning & Policy Analysis, GGBHTD

TABLE 3-12 (Continued)

	Sonoma Local	Marin Local	Sonoma/Marin	Sonoma/S.F.	Marin/S.F.
Sex					
Male	42.2	36.5	52.9	67.3	56.9
Female	57.8	63.5	47.1	32.7	43.1
TOTAL	100.0	100.0	100.0	100.0	100.0
Sample Size	289	2341	119	388	2531
Auto Ownership					
None	24.1	24.0	19.6	11.9	17.7
One	34.5	30.1	33.0	38.1	39.8
Two	27.0	32.6	28.6	36.2	32.7
Three or more	14.4	13.2	18.8	13.8	9.7
TOTAL	100.0	99.9	100.0	100.0	99.9
Sample Size	278	2296	112	362	2514
Passenger Type					
Student, age 6 - 21	46.7	58.1	37.8	7.1	8.4
Senior, age 65+	4.0	5.6	4.5	4.5	5.1
Handicapped Person	3.6	3.0	0.9	1.1	1.2
All others	45.7	33.2	56.8	87.3	85.3
TOTAL	100.0	99.9	100.0	100.0	100.0
Sample Size	276	2379	111	354	2490
Possession of Transit Discount Card					
Yes	6.8	4.2	4.0	0.9	2.5
No	93.2	95.8		99.1	97.5

FARE — BUS TRANSIT

Fare Zones

Fares are determined by zones (see System Map on page 1 and the Fare Tables on page 19) and vary according to length of trip and the number of zones traversed. To use the Fare Tables, first identify the Fare Table classification (i.e. Adult, Elderly/Handicapped, Student) and then identify the number of the zone where your trip begins and where your trip ends. For example, if you are an Adult and are in Zone 3 and you wish to travel to Zone 6, you would refer to the large Zone number " 3"(at the left side of the table), and follow across until you are at the column which is labeled Zone "6" at the top. Your fare is in that column, which, in this example, is $1.75.

Exact Change & Tickets

Exact change and/or Tickets are required for bus fare, since our drivers DO NOT carry change. See below and page 20 for further information about tickets.

Discount Cash Fares

A discount cash fare is offered for:

Senior Citizens — age 65 or older, with Bay Region Transit Discount or Medicare card.

Handicapped persons — with Bay Region Transit Discount Card.

Students — age 6 through 21 with school ID required for high school and college.However, students making trips *entirely within* Marin County must use *Student Discount Tickets. These tickets are acceptable only on certain routes.* See below and page 20.

Special Conditions

Children, age 5 and under, ride free (limit of two children per accompanying adult) on all routes

Blind persons with Bay Region Transit Discount Card (stamped *blind*) or Golden Gate Blind ID card, ride free on all routes.

Handicapped persons authorized to travel with an attendant (this would be indicated by a "Red Dot" on handicapped persons ID card) may have their attendant travel for the same discount fare as for the handicapped (or *blind*) person.

Students may purchase books of 20 tickets at a discount for local rides *within* Marin County on routes 1, 3, 5, 9, 10, 11, 15, 19, 20, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 50, 51, 62, 63, 64, and 70. See page 20 for further information.

Courtesy Seating

All Golden Gate Transit buses have courtesy seating provided at the front of the bus for the convenience of elderly and handicapped passengers. Please make these seats available when appropriate.

FARE — FERRY TRANSIT

Larkspur Ferry Terminal

The Larkspur Ferry Terminal is located in Fare Zone 3.

Adult fare, one-way between Larkspur and San Francisco, is $1.50 on weekdays and $2.00 on weekends and holidays. A discount fare of 75¢ on weekdays and $1.00 on weekends and holidays is available to youths (aged 6-12), senior citizens (65 or older with Bay Region Transit Discount Card), and handicapped persons (with Bay Region Transit Discount Card). Blind persons with Bay Region Transit Discount Card (stamped *blind*) ride free. If a handicapped person is authorized to be accompanied by an attendant (this would be indicated by a "red dot" on handicapped person's ID card), the attendant may travel for the same discount fare as the handicapped person. Children (aged 5 or less) travel free when accompanied by an adult (limit of two children per adult). Commuters can obtain a discount on books of 20 tickets or on a 7-day ferry pass (which may be purchased any day of the week) at the ferry terminals.

Feeder Bus Service Feeder bus routes operate between the Larkspur Ferry Terminal and various parts of Marin County as shown on pages 14-16. Routes 15, 19, 25, 29, 31, 37, 41, and 51 are scheduled to provide direct connections with ferry arrival/departures. Please see separate Larkspur Ferry Pamphlet for details. There is no charge for feeder bus service ***to*** the Larkspur Ferry Terminal, but a fare of 25¢ is charged for feeder bus service ***from*** the Terminal.

Sausalito Ferry Terminal

The Sausalito Ferry Terminal is located in Fare Zone 2.

Adult fare, one-way between Sausalito and San Francisco, is $2.00, every day of the week. A discount fare of $1.00 is available to youths (aged 6-12), senior citizens (65 or older with Bay Region Transit Discount Card), and handicapped persons (with Bay Region Transit Discount Card). Blind persons with Bay Region Transit Discount Card (stamped *blind*) ride free. If a handicapped person is authorized to be accompanied by an attendant (this would be indicated by a "red dot" on handicapped person's ID card), the attendant may travel for the same discount fare as the handicapped person. Children (aged 5 or less) travel free when accompanied by an adult (limit of two children per adult). Commuters can obtain a discount on books of 20 tickets or on a 7-day ferry pass (which may be purchased any day of the week) at the ferry terminals.

Feeder Bus Service Feeder bus routes operate between the Sausalito Ferry Terminal and various parts of south Marin County. Routes 3 and 5 are scheduled to provide direct connections with ferry arrival/departures, and some Route 10 buses connect with the ferry and then continue their regular route into San Francisco. Please see separate Sausalito Ferry Pamphlet for details. There is no charge for feeder bus service ***to*** the Sausalito Ferry Terminal, but a fare of 25¢ is charged for feeder bus service ***from*** the Terminal.

BUS FARE TABLES by Fare Zones

See map on page 1 for Fare Zone boundaries.

Adult Cash Fare

ZONE	1	2	3	4	5	6
1	.75	1.45	1.75	2.05	2.60	2.90
2	1.45	★.50	★.50	★.50	1.75	2.05
3	1.75	★.50	★.50	★.50	1.45	1.75
4	2.05	★.50	★.50	★.50	1.15	1.45
5	2.60	1.75	1.45	1.15	.35	.35
6	2.90	2.05	1.75	1.45	.35	.35

Elderly or Handicapped Discount Cash Fare

ZONE	1	2	3	4	5	6
1	.35	.70	.85	1.00	1.30	1.45
2	.70	★.25	★.25	★.25	.85	1.00
3	.85	★.25	★.25	★.25	.70	.85
4	1.00	★.25	★.25	★.25	.55	.70
5	1.30	.85	.70	.55	.15	.15
6	1.45	1.00	.85	.70	.15	.15

Student Discount Fare

ZONE	1	2	3	4	5	6
1	.35	.70	.85	1.00	1.30	1.45
2	.70	•	•	•	.85	1.00
3	.85	•	•	•	.70	.85
4	1.00	•	•	•	.55	.70
5	1.30	.85	.70	.55	.25	.25
6	1.45	1.00	.85	.70	.25	.25

• Students travelling ***entirely within*** Marin County may obtain a discount on bus rides by using special ***Student Discount Tickets*** which may be purchased in books of 20 tickets, for $7.00 a book. If a student does not have a ticket, the "Adult" fare must be paid. Also, see footnote below and page 20.

★ However, travel *between east and west* Marin costs twice as much; i.e. $1.00 for adults, 50¢ for Elderly/Handicapped and *2 Discount Tickets* for students.

The division between East and West Marin are the intersections of Shoreline & Panoramic Highways, west of Mill Valley and Sir Francis Drake Blvd., at the summit of White's Hill west of Fairfax.

Shaded areas indicate fares for travel either ***within*** Marin County or ***within*** Sonoma County. These fares are planned to be increased as of April 1, 1981. Watch for future notices regarding the fares within Marin County. The new fares within Sonoma County will be 50¢ for adults, 25¢ for elderly or handicapped, and 25¢ for students.

Figure 3-1

Golden Gate Bridge Traffic

(1937 to present)

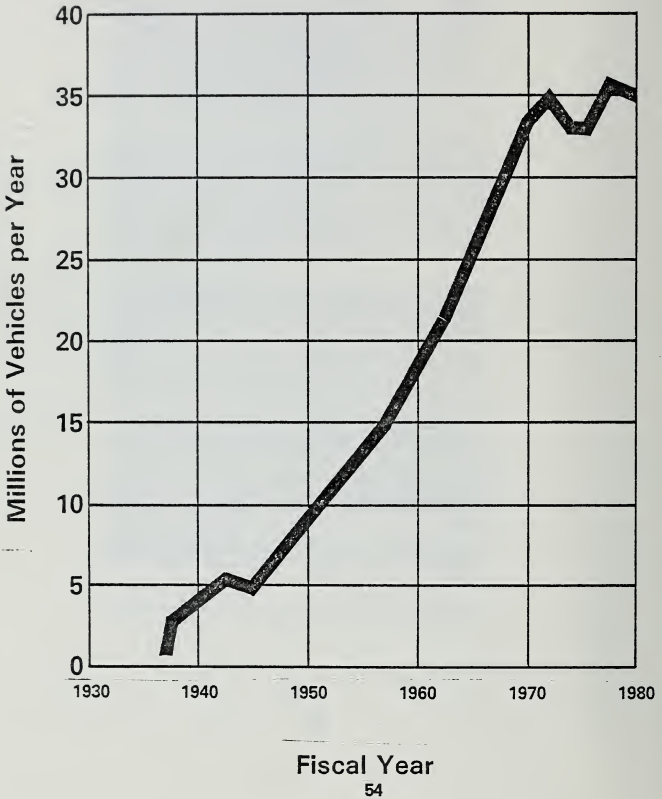
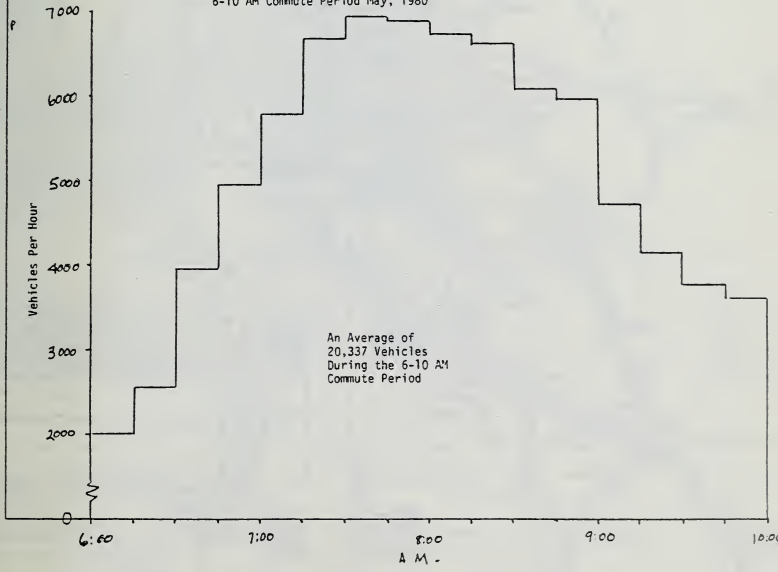
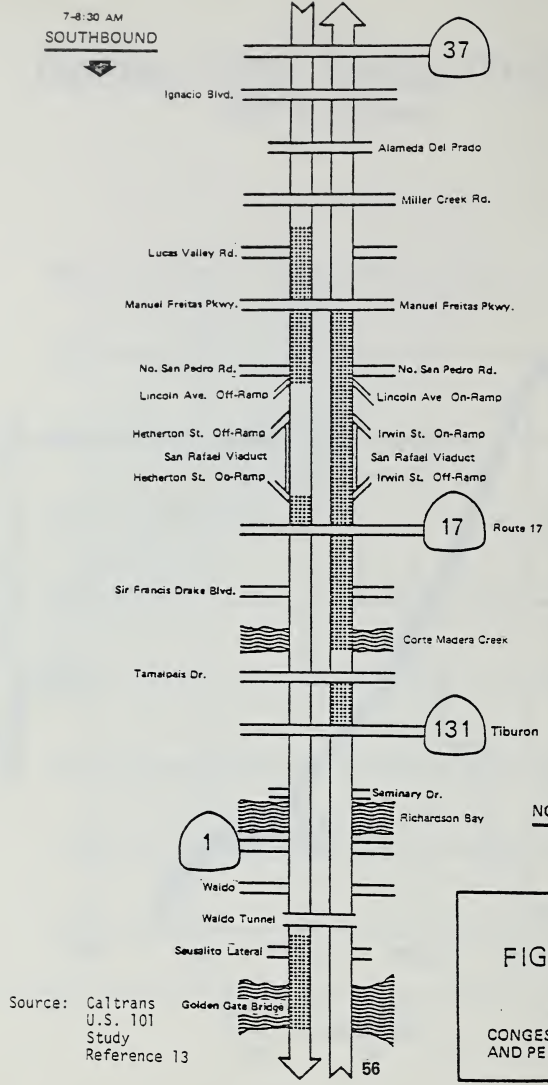


Figure 3-2

Golden Gate Bridge Southbound Traffic Volume in 15 Minute Intervals

6-10 AM Commute Period May, 1980





Source: Caltrans U.S. 101 Study Reference 13

FIGURE 3-3

MARIN 101

CONGESTION LOCATIONS AND PERIODS

FALL 1978

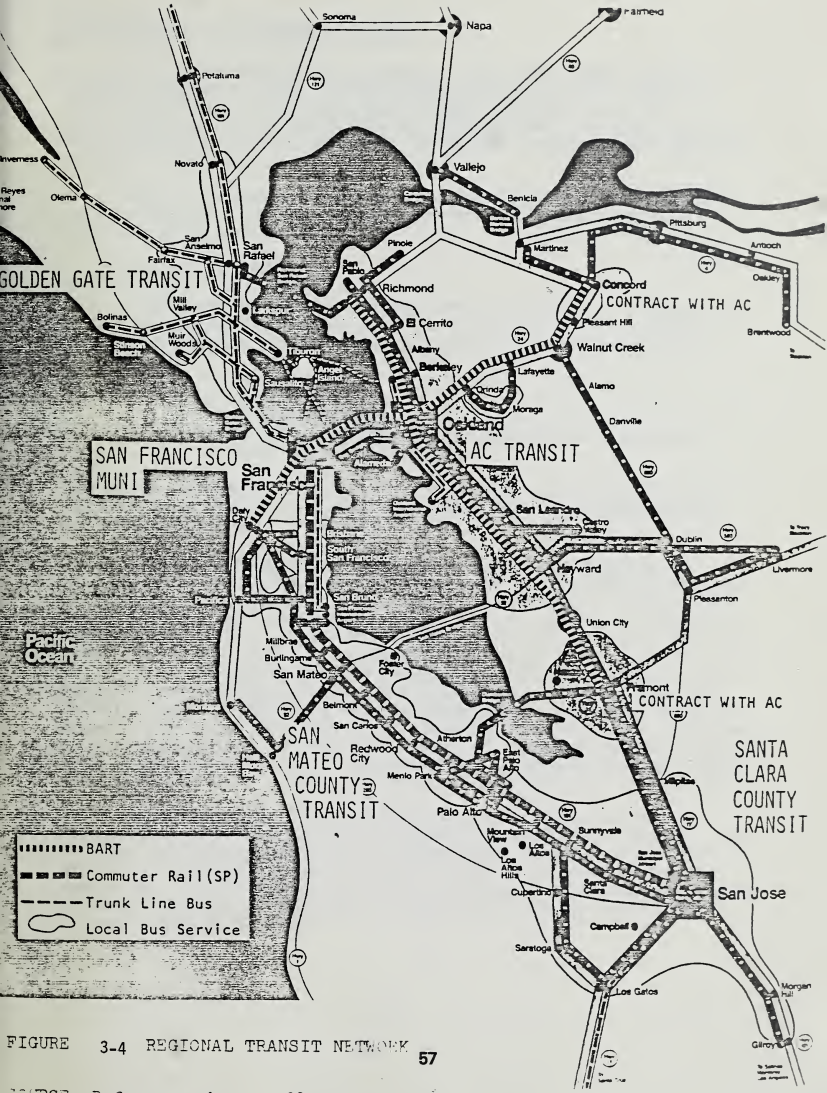


FIGURE 3-4 REGIONAL TRANSIT NETWORK

SOURCE: Reference 4, page 36.

4.0 ASSESSMENT OF ENVIRONMENTAL EFFECTS

This chapter identifies the impacts which would result from the proposed reduction in ferry services between Larkspur and San Francisco. Unless otherwise stated the assessment assumes that the service reduction would go into effect on July 1, 1981, and that all other services would continue as currently planned. The proposed reductions are described in detail in Chapter 2.

Many of the impacts relate to the number of persons who would use the ferry crossings if they were not discontinued. Recent patronage levels are shown on Table 4-1.

4.1 Traffic and Transportation

If off-peak and weekend crossings are discontinued, as proposed, the persons who would otherwise have used the ferries for a trip between San Francisco and central Marin County, would make the journey as follows:

- by an earlier or later ferry;
- by transit bus;
- by private coach;
- by private automobile, including carpools & vanpools
- would not make the journey.

Some of the passengers currently using the morning and evening crossings, which are to be retained, would have to change their travel mode due to not being able to plan a round trip by ferry.

Assessment of the probable effects of the service reduction on ferry patronage is complex, and must rely heavily on the analyst's judgment. It can be seen from Table 4-1, that even if all the riders of discontinued ferries were to travel by private automobile, their numbers would amount to a maximum rate of flow of some 300 to 400 persons over a period of two hours. This would produce up to 100 additional vehicles per hour, and could not reasonably be expected to significantly affect traffic volumes or the levels of traffic congestion along the highways connecting San Francisco and Marin County at off-peak times. On summer weekend and holiday afternoon there is heavy traffic congestion on the Golden Gate Bridge and an additional one hundred vehicles per hour, would cause less than one minute of additional delay to the affected traffic. The possibility of operating special Larkspur ferry service on these occasions is discussed in Chapter 6, Mitigation Measures.

Golden Gate Transit buses provide the only public transportation between San Francisco and central Marin County, other than the ferries. Table 4-1 shows that the average patronage on the evening commute period ferries which depart San Francisco at 3:45, 6:30 and 7:15PM is 558 passengers per evening peak. At 40 passengers per bus, 14 additional buses would be required to carry this number of passengers. Transbay bus route #50 and #70 operate through central Marin County.

TABLE 4-1

PATRONAGE ON LARKSPUR-SAN FRANCISCO SCHEDULED FERRY CROSSINGS

SUBJECT TO PROPOSED CANCELLATION

AVERAGE PASSENGERS PER CROSSING

	July & August 1980	June & Sept 1980	Jan thru May Oct thru Dec 1980	Average for 1980
WEEKDAYS:				
Departing Larkspur to San Francisco				
7:00AM*	403	408	366	379
7:35AM*	427	416	348	372
8:35AM	223	195	171	184
10:45AM	374	248	172	218
12:45PM	206	133	116	167
2:45PM	152	102	56	80
4:30PM	27	60	48	46
5:35PM**	37	38	27	30
6:20PM	29	21	16	19
Departing San Francisco to Larkspur				
7:40AM	7	8	5	6
9:45AM	37	27	19	23
11:45AM	108	79	59	70
1:45PM	171	139	113	140
3:45PM	331	248	234	252
4:45PM*	470	410	346	377
5:25PM*	555	511	339	404
6:30PM**	259	211	195	208
7:15PM	125	105	90	98
SATURDAYS, SUNDAYS & HOLIDAYS				
Departing Larkspur to San Francisco				
10:50AM	228	202	121	152
12:50PM	234	190	106	141
2:50PM	203	158	105	130
4:50PM	155	118	74	95
Departing San Francisco to Larkspur				
11:50AM	155	147	100	117
1:50PM	143	143	101	115
3:50PM	229	215	165	184
5:50PM	258	247	151	185

* Crossings to be retained under Alternative Proposals 1 and 2
** Additional crossings to be retained under Alternative Proposal # 2 only
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along and beside the U.S. 101 freeway, and pass the Larkspur Terminal. They operate all day, seven days a week, and are expected to be the transit alternative for the majority of the off-peak and weekend Larkspur ferry passengers. Bus route #50 and #70 together, provide three buses per hour in each directon on weekdays, two buses per hour on Saturdays, Sundays and Holidays. Transbay route #20 serves Corte Madera and San Anselmo with all day, seven day a week service at thirty minute intervals on weekdays, sixty minute intervals on Saturdays, Sundays and Holidays. The buses used on these routes currently have forty-five seats but, are expected within the year to be re-fitted to a forty-nine seat configuration. When all seats are occupied, up to ten standing passengers are allowed. Many of these bus schedules are heavily loaded, even during off-peak and weekend periods.

It is seen from Table 4-1, that if a significant portion of the off-peak or weekend Larkspur ferry patrons choose to make their journey by Golden Gate Transit buses, it is likely that some of the schedules of Route #50, #70, or #20 would be overloaded. The District has the manpower and equipment to operate additional buses on these routes during the off-peak and weekend periods. The desirability of making provision for these additional bus operations is discussed in Chapter 6, Mitigation Measures.

The responses to passenger surveys performed by the District in 1977 (References 16 and 17) indicated that over 80% of the off-peak and weekend riders of the Larkspur ferries were traveling for recreational and entertainment related purposes, rather than social, business or work related purposes. It is likely, therefore that discontinuation of ferry services would cause a diversion of ferry patrons to services offered by the region's private coach operators. There is no reason to believe that the additional customers would cause any difficulties for the coach operators or adversely effect the quality of service provided to any other group of persons.

Table 4-1 shows that the 5:25PM weekday departure from San Francisco carried an average 555 passengers during midsummer and 339 passengers during fall, winter, and spring. The vessels have a boarding limit (for practical considerations and U.S. Coast Guard regulations) of 725 passengers. They have a total of 509 seats, with 363 being inside the weather protected lounges. The present loading pattern of the 5:25PM departure is believed to represent the practical capacity of the vessels under current travel market conditions. If passengers from other ferry crossings are diverted to the 5:25PM crossing, ride quality will deteriorate and an almost equal number of passengers will leave the ferries for some other mode of travel. Modifications to increase the seating capacity of the vessels to provide 525 total seats including 379 inside seats have been planned for two years but have not yet been approved for Federal funding.

4.2 Energy and Air Quality

The gas turbine powered vessels, which provide the ferry service between San Francisco and Larkspur, consume an average of 423 gallons of fuel per trip when operating on three engines, 316 gallons per trip on two engines and 180 gallons per trip on one engine. The saving in fuel consumption by ferry operations which would result from the proposed service reductions is shown in Table 4-2. For a typical operating year, such as 1980, the proposed service reductions would result in a saving in ferry fuel consumption of 934,000 gallons per year under Alternative 1 or 842,000 gallons per year under Alternative.

The emission rates for the gas turbine engines (Reference 4) in pounds of pollutant per gallon of fuel consumed are:

Carbon Monoxide (CO)	0.047 lbs / gal.
Unburned Hydrocarbons (HC)	0.001 lbs / gal.
Oxides of Nitrogen (NO_x)	0.070 lbs / gal.

Thus the reduction in ferry generated emissions would be:

	Tons of Pollutant Per Year	
	Alternative 1	Alternative 2
CO	21.9	19.7
HC	.6	.6
NO_x	32.7	29.5

This emission reduction would occur over water and would have no local impacts.

These savings in ferry fuel consumption and emissions would be offset to some extent by the fuel consumption and emissions of the additional automobile usage that would result from the discontinuation of ferry services. As explained in Section 4.1, the nature of the affected off-peak and weekend travelers is such that it is not possible to estimate the numbers of ferry riders who would be diverted to auto or other modes of travel. To illustrate the general order of magnitude of the probably increase in fuel consumption and emissions, it may be seen from Table 4-1 that the average daily patronage on the ferry crossings subject to proposed cancellation is 1541 passengers per average weekday and 1119 passengers per average Saturday, Sunday or Holiday. (Alternative 1 only). Based on the operating days shown in Table 4-2, this indicates approximately 512,000 passengers per year use the ferry crossings which are proposed for cancellations. To illustrate the general order of magnitude of the auto-related effect, it is assumed that if one half of these ferry passengers were to make the trip by auto with 1.5 persons per auto, and fuel and emission factors previously used by the District (Reference 15), are applicable, the increase in fuel consumption and emissions would be as follows:

Fuel Consumption		171,000 gallons per year
Emissions:	CO	55 tons per year
	HC	5 tons per year
	NO_x	7 tons per year

In addition to the fuel and emission savings from the reduction in ferry operations there would be a lesser reduction resulting from the discontinuance of the connecting ferry feeder bus services. The seven coaches released from ferry feeder service after 7:35AM and before 5:30PM at Larkspur would be re-deployed to productive peak-period service. The mileage operated in the peak period service would

TABLE 4-2

REDUCTION IN FUEL CONSUMPTION OF LARKSPUR FERRY OPERATIONS

RESULTING FROM PROPOSED REDUCTION OF FERRY SERVICE

Departure Time From: Larkspur	San Francisco	Number of Engines	Gallons of Fuel Saved Per Day Alternative 1	Alternative 2
WEEKDAYS:				
7:00AM		3	-	-
7:35AM		3	-	-
	7:40AM	2	316	316
8:35AM		2	316	316
	9:45AM	1	180	180
10:45AM		1	180	180
	11:45AM	1	180	180
12:45PM		1	180	180
	1:45PM	1	180	180
2:45PM		1	180	180
	3:45PM	2	316	316
4:30PM		2	316	316
	4:45PM	2	-	-
	5:25PM	2	-	-
5:35PM		1	180	-
6:20PM		1	180	180
	6:30PM	1	180	-
	7:15PM	1	180	180
Total Fuel Saved Per Weekday			3064	2704
SATURDAYS, SUNDAYS & HOLIDAYS:				
10:50AM		1	180	180
	11:50AM	1	180	180
12:50PM		1	180	180
	1:50PM	1	180	180
2:50PM		1	180	180
	3:50PM	1	180	180
4:50PM		1	180	180
	5:50PM	1	180	180
Total Fuel Saved Per Day (Weekend/Holiday)			1440	1440

OPERATING DAYS - 1980

Weekdays	254
Weekend days and operating holidays	108
Non-operating holidays	3
	365

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be not less than the mileage currently operated. It is expected, therefore, that the proposed action would not cause a significant change to the overall fuel consumption and emissions of the District's bus system. The re-deployment of ferry feeder buses would, in turn, reduce the amount by which automobile use would increase as a consequence of the ferry service reduction.

The combined effect of these impacts would be a reduction in fuel consumption and emissions, somewhat less, than the reduction attributed to reducing the ferry operations alone. There appears to be a possibility that the carbon monoxide and unburned hydrocarbon emissions from increased auto traffic would exceed the reduction in these emissions resulting from reduced ferry operations. The amount of such increase would, however, be insignificant in relation to the level of emissions from transbay traffic being generated during off-peak and weekend periods. Therefore, the proposed action could have no significant effect on air quality.

4.3 Socio-Economic Impacts

4.3.1 Potential To Create Hardship

The proposed action has the potential to create economic or other hardship for a number of groups or individuals. This potential is reviewed in terms of the groups which might conceivably be effected.

Ferry Users- The proposed action would deny service to a number of regular users of the service. As explained in Section 4.1, some present users of crossings, which would be retained under the proposal, may be diverted to other modes due overcrowding of the vessels on the remaining crossings. Alternative bus services are frequent and comfortable through they do not have stops in the immediate area of the ferry terminals. Possible improvements to bus services are suggested for consideration as mitigation measures in Chapter 6. While these effects will cause considerable inconvenience to many members of the traveling public, it is believed to be unlikely that they will cause hardship.

District Employees- The proposal will result in a major reduction in the numbers of personnel in the Ferry Division. This would cause loss of employment to a number of persons at a time when general unemployment rates are high. All terminated employees would receive two weeks notice. Precise lists of the employee positions to be terminated would not be made until after the proposed action had been taken, and details regarding its alternatives and mitigation measures specified. The District's procedures require that a number of months would elapse between the initiation and the implementation of the proposal to reduce ferry service. Potentially affected employees are aware of their circumstances and have

opportunity to make personal contingency plans against possible layoff. The District has drafter and is considering the adoption of a "Lay-Off Procedure" and "Bumping Right Procedure." These draft procedures include provisions for outplacement services, recall procedures and other provisions to minimize hardship to employees.

The proposed reduction in ferry operations lead over a period of time, to changes in work load and adjustments in staffing levels in divisions and departments other than the ferry division. Such adjustments would result from actions which would be taken independently from and subsequent to the proposed action. Fewer people would be affected at any one time, or as a consequence of any one action. The above mentioned Layoff and Bumping Right Procedures would be applicable to non-ferry division personnel.

Ferry Related Businesses

A private business sells refreshments on board the ferries in accordance with a concessions contract between the business and the District. Another business provides advertising at the ferry terminals. It is expected that these businesses would suffer a significant loss of revenue as a result of the proposed action, and this loss of revenue could cause the termination of some employees of the business.

Many retail businesses in the Larkspur Landing Complex, near the Larkspur Terminal, and a restaurant adjacent to the San Francisco Terminal are likely to suffer a significant loss of revenues as a result of the proposed action. Moreover, the Larkspur Landing Complex is a very recent development and the proposed action would occur during a period of low consumer spending. Both these conditons make the impacted businesses more sensitive to loss of revenues.

Affected Residential Areas

The proposed service reductions could cause some of the persons who would have used the Larkspur ferries for recreational trips to be diverted to the Sausalito ferry. This would cause an increase in the number of recreational visitors in downtown Sausalito. While there are some parties, particularly tourist related businesses, who would welcome the additional visitors, there are others who consider that additional visitors would reduce the quality of the environment in this small community.

4.3.2 Regional Economic Impacts

The Golden Gate ferries are a widely known and publicized attraction for visitors to San Francisco and the greater Bay Area. They are believed by many to be a regional economic asset, like the Golden Gate Bridge and the San Francisco cable cars, which serve to enhance the regions competitive standing for tourism, business conventions and business locations. The proposed action would significantly reduce the ferries role as a regional asset.

4.3.3 Potential to Disproportionately Impact Racial Minorities, The Elderly, the Handicapped or Transit Dependent Groups

The proposed action would result in retention of the weekday peak period Larkspur ferry crossings which primarily serve commuters who reside in Marin and work in San Francisco, and discontinuation of all other crossings. The statistics in Table 3-2 shows that persons of minority race, persons with low income and persons over 65 years of age constitute a smaller percentage of the population in Marin County (9.0%, 9.2%, 8.7%) than in the population of San Francisco (40.0%,14.6% and 13.9%). Table 3-3 further illustrates the higher incomes of Marin County residents relative to San Francisco and the metropolitan area as a whole. A comparison of Table 3-2 and 3-11 shows that the incomes of Larkspur ferry commuters are generally higher than the incomes of Marin County residents as a whole, while the incomes of Larkspur ferry patrons on weekday off-peak and weekend ferry crossings are much lower, and comparable to the general income levels of San Francisco residents. Tables 3-2 and 3-10 also show that persons over 65 constitute about 3.3% of Larkspur ferry commuters but about 12% of off-peak and weekend passengers and 8.9% of the regions population.

From these statistics it can be inferred that racial minorities and persons with relatively low incomes exist in significantly higher proportion among the passengers whose service would be discontinued than for passengers whose service would be retained. They further infer that minorities and persons of low income exist among the affected passengers in approximately the same proportion as they exist in the San Francisco Bay Area population as a whole. Persons over 65 exist among the effected passengers in significantly higher proportion than they exist in the Bay Area population.

The ferries are the only transportation services provided by the District which are accessible to persons in wheelchairs at the present time. While the District is currently fitting two of its buses with passenger lifts, and all new buses to be acquired by the District will be required to have lifts, the District does not expect to have 50% of its buses so equipped until 1985 or later. At the present time the ferry terminals boarding ramps and ferry passenger lounges are accessible. The restrooms on board the vessels cannot be used at the present time, but the District plans to make improvements to the restrooms to make them accessible. The proposed action would result in a reduction of 37% of the public transportation schedules between San Francisco and Marin County which are currently accessible to persons in wheelchairs. A possible measure to mitigate this effect is discussed in Chapter 6.

4.4 Financial Impacts

Section 2.3 explains that the objectives of the proposed action are to reduce the ferry operating deficits and to improve the financial performance of the ferry system as measured by its "deficit per passenger" and "operating ratio." The effect of the proposed action in terms of achieving their objectives is shown in Table 4-3. The proposed action would substantially reduce the ferry operating deficit and improve the ferry system's financial performance. It would thereby contribute to the District's efforts to achieve economies in operation and develop a transit system which is less dependent on public subsidies. It would release funds which could be used to provide additional bus service during the congested peak periods.

Capital investment in the ferry system to date has been $39.8 million, of which $15.5 million was for the vessels, $23.8 million for the terminals (including fuel, maintenance and repair facilities) and $0.5 million for support equipment. Of the total investment $27.5 million was provided from Federal Government grants and the remaining $12.3 million was provided from the District's resources. The ferry system's capital facilities were planned and designed to accommodate major expansion of service to meet future growth in transit demand. The proposed reduced level of operations would, therefore, result in a major under-utilization of the public investment in the ferry system. The District is currently planning to make alterations to the gas turbine powered vessels to reduce operating costs and improve the feasibility of again operating some or all of the off-peak and weekend Larkspur ferry service. The role of these plans as mitigation measures is discussed in Chapter 6.

4.5 Wave Related Impacts

The ferries are currently being operated at reduced speed in the approach to the Larkspur Ferry Terminal to reduce alleged wave related effects. The proposed action would reduce Larkspur ferry operations from 106 to 20 scheduled crossings per week. This would

TABLE 4-3

EFFECT OF PROPOSED SERVICE REDUCTIONS ON FERRY DIVISION

OPERATING DEFICITS AND FINANCIAL PERFORMANCE

	FERRY DIVISION FY 80-81 FINANCIAL PROJECTION[1]	
	Current Service	Reduced Service (Alternative 1)
Expenses	$7,146,271	$4,468,696
Revenue	2,824,600	2,144,922
Deficit without District Division Transfer	(4,321,671)	(2,323,774)
Deficit with District Division Transfer ($905,125)	(5,226,800)	(3,228,903)
Deficit with Proposed District Division Transfer	(4,933,638)	(2,742,878)
Patronage		
AM Commuters	1,071	775
PM Commuters	1,480	871
	2,551	1,646
Fares as % of Expense Without District Division Transfer	40%	48%
Fares as $ of Expense with District Division Transfer ($905,129)	35%	40%
Fares as % of Expense with Proposed District Division Transfer	36%	44%

Source: Harvey M. Rose Accountancy Corporation, January 14, 1981 (See Appendix A

Notes: 1 - Revenue is based on the fare structure in effect prior to the fare increases of March 1, 1981. Additional Ferry Division revenue of approximately $123,000 will result from these increases.

2 - See Table 5-1 for the financial impacts of Alternative 2.

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substantially reduce any possible impacts resulting from waves generated by the Larkspur ferries.

4.6 Other Impacts

The proposed ferry service reductions would reduce only off-peak and weekend service, but have no significant impact on traffic conditions or land use patternsn. This reduction would also conserve vitally needed financial resources to maintain the Districts' peak period transit services, and is compatible with regional and local plans.

The proposed action would not affect water quality, noise levels, or the habitat of living things. It would not affect the quality of the human environment in ways other than those discussed in sections 4.1 through 4.5 above.

The proposed action has been considered, and found to have no potential to effect the environment with respect to the following areas of concern:

Services and Utilities
Construction
Geology and Soils
Water Resources
Topography
Climate
Wildlife and Vegetation
Visual, Aesthetic and Archeological Resources
Mineral, Agricultural and Recreational Resources
Human Health

5.0 ALTERNATIVES

5.1 The Two Alternative Proposals

Two Alternative Proposals, both representing the concept of "austere service" have been evaluated. They are designated Alternatives 1 and 2, and are described in detail in Section 2.3. Under both alternatives the eight Larkspur ferry crossings currently made each Saturday, Sunday or holiday would be eliminated; and the eighteen crossings made each weekday would be reduced to either four or six. Alternative 1 would employ four crossings, with two vessels crossing southbound during the morning commute peak, remaining in San Francisco during the mid-day, and crossing northbound during the evening peak. Alternative 2 would employ two vessels and perform the same crossings as in Alternative 1 except that during the evening commute period one of the vessels would make an additional round trip. Alternative 2 is slightly less austere than Alternative 1. As shown in Table 4-3, Alternative 2 would be slightly less effective in reducing ferry deficits and improving financial performance. Alternative 2 would, however, provide additional service during the more heavily patronized evening commute period.

5.2 Alternative 2A & 2B

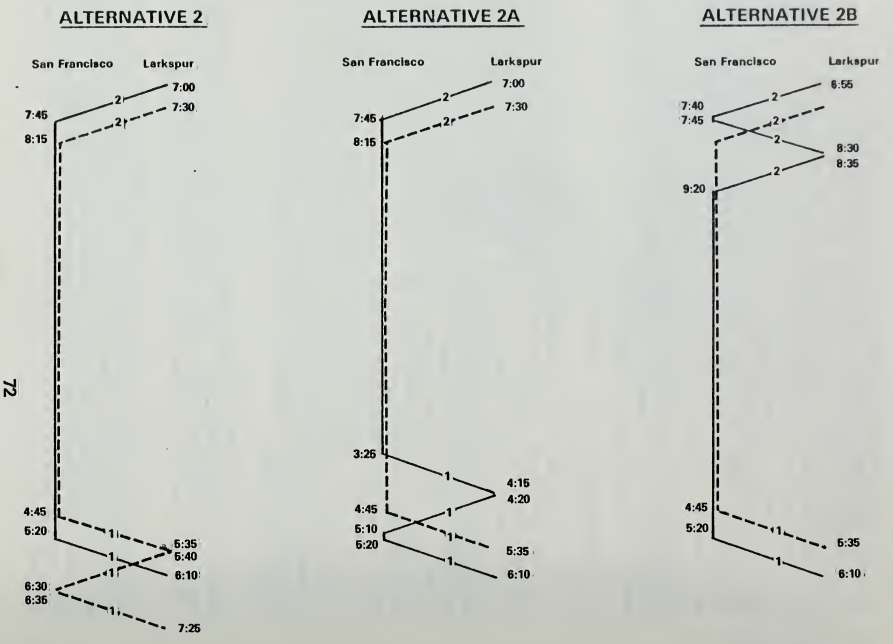
Two variations of Alternative 2, designated Alternatives 2A and 2B are also considered. As explained in Section 2.4 and 5.1, Alternative 2 is distinguished from Alternative 1 by the operation of an additional round trip during each evening commute period. This round trip would be performed during the latter part of the evening commute period, with the vessel departing Larkspur at 5:40PM and departing San Francisco for its final trip to Larkspur at 6:35PM. The variation used in Alternative 2A would involve performing the round trip during the early part of the evening commute period instead of the latter part. A vessel would depart San Francisco at 3:25PM, depart Larkspur at 4:20PM and finally depart San Francisco for Larkspur at 5:20PM. The variation used in Alternative 2B would involve performing the round trip during the latter part of the morning commute period, with the vessel departing San Francisco at 7:45AM and departing Larkspur for San Francisco at 8:35AM. To permit this schedule the earlier operation of the vessel, which would otherwise be scheduled to depart Larkspur at 7:00AM and arrive San Francisco at 7:45AM, would be scheduled to depart Larkspur at 6:55AM and arrive San Francisco at 7:40AM.

The Board of Directors may, within the scope of the proposed action, decide to adopt Alternative 1 (which involves four one way trips, and no round trips during any single commute period) or any combination of Alternative 1 and one or more of the round trips described as Alternatives 2, 2A and 2B above.

The round trips involved in Alternatives 2, 2A or 2B would each incur additional costs, primarily for ferry labor and fuel. An estimate of these costs, together with an allowance for the cost of operating ferry feeder buses, and for the additional ferry system revenues which may result from inclusion of a particular round trip into the austere service, is provided in Table 5-1. The crossing schedules involved in Alternatives 2, 2A and 2B are shown graphically in Figure 5-1.

FIGURE 5-1

LARKSPUR FERRY SCHEDULES SHOWING VARIATIONS ON ALTERNATIVE 2



As explained in Section 4.1, a precise and reliable estimate of the amount of this additional patronage and revenue is not possible. The allowance made in Table 5-1 takes the average number of passengers on the crossings of each round trip, from Table 4-1, multiplied by $1.80, which is the expected average revenue for passengers under the current ferry fares. These figures provide the best working allowance for the probable additional revenues that can be made at the present time.

5.3 Other Alternatives

Other alternatives are possible within the scope of the proposed action and may be considered and adopted by the Board of Directors. For example, the Alternative 1 schedules may be operated during the fall, winter and spring seasons and the Alternative 2, Alternative 2A or the combination of Alternatives 2 and 2A schedules during the summer season. Such an action would result in financial and other impacts intermediate in magnitude between the impacts of Alternative 1 and the impacts of Alternative 2.

5.4 Alternatives to the Proposed Action

As explained in Section 2.3, the objective of the proposed action is to reduce ferry operating deficits and thereby defer the need for future Bridge toll or transit fare increases and to improve the financial performance of the ferry system. Alternatives to the proposed action are:

a) To achieve the objectives by some other action;
b) To compromise, postpone or abandon the objectives.

5.4.1 Other Means of Achieving the Objectives

All actions to increase ferry fares and/or reduce ferry expenditures have the potential to reduce ferry operating deficits and improve financial performance. Following extensive economic and environmental studies, the Board of Directors, on January 30, 1981, acted to increase Bridge tolls and transit fares. Effective March 1, 1981, the cash fares on the Larkspur ferries were increased from $1.50 to $2.00. An additional 25¢ cash fare continues to be charged for feeder bus rides from the terminal to other points within the Central Marin fare zone (zone 3). Bus rides between the terminal and points beyond this fare zone pay the appropriate additional fare. For persons using the pre-paid books of 20 tickets, fares on the Larkspur ferries were increased from $1.35 to $1.80 though consideration is being given to an amendment which would permit continued use on the Larkspur ferrie of convenience tickets for bus rides between San Francisco Central Marin (zone 3). These tickets have increased from $1.35 to $1.58. A pass, allowing seven days unlimited use of the ferries for $10.00, was discontinued. Discount fares for students, senior and handicapped persons, on both buses and ferries, continue to be 50% of the full fare.

During November and December 1980 and January 1981 the Board of Directors considered the need to raise tolls and fares, studied an analysis of the impacts of this action (Reference 15) and heard testimony at three

Table 5-1

COMPARATIVE COST OF VARIATIONS TO ALTERNATIVE 2

	VARIATION INVOLVING ONE ROUND TRIP CROSSING PER WEEKDAY, IDENTIFIED BY		
	ALT.2	ALT. 2A	ALT. 2B
CHARACTERISTICS OF ROUND TRIP:			
Departure Times: Larkspur	5:40PM	4:20PM	8:35AM
San Francisco	6:35PM	3:25PM	7:45AM
Number of Engines Used:			
Larkspur to San Francisco	1	1	1
San Francisco to Larkspur	1	1	1
Average Passengers:(1980)			
Larkspur to San Francisco	30	46	184
San Francisco to Larkspur	208	252	6
EFFECT IN DOLLARS PER YEAR:			
Estimated Additional Ferry Operating Costs	$201,000	$177,000	$243,000
Feeder Bus Costs	49,000	122,000	122,000
Allowance for Additional Revenue	(102,000)	(128,000)	(81,000)
Increased Ferry Deficit	$148,000	$171,000	$284,000

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public hearings. As a connected action they decided to study the means by which the District could substantially reduce ferry deficits and improve ferry financial performance. In addition to the proposed action, studies were made of either terminating ferry services altogether or chartering ferry service from a commercial operator. Consultants were hired to evaluate the latter two alternatives. Their report is included as Appendix A. The alternatives of chartering for or terminating ferry service involve greater uncertainties and longer lead times than the proposed action and their future consideration would not be precluded by the proposed action.

Actions which would increase ferry patronage, at existing or reduced levels of fares, have the potential to increase revenues and thereby reduce ferry deficits. In recent years the District has made every effort to test opportunities to increase ferry patronage. Specifically it has:

a) Set up a Marketing Department; one of the primary objectives was to increase patronage on the ferries by various marketing projects.

b) Marketed a ferry pass which allowed unlimited use of the Larkspur and Sausalito ferries for seven days from the time of purchase, at a cost of $10.00.

c) Marketed an arrangement for free passengers' transfer between the ferries and MUNI.

d) Marketed additional ferry services introduced during the Christmas shopping season which connected with a free shuttle bus service which operated between the San Francisco Ferry Building and Union Square in San Francisco.

e) Marketed a "family fare" which, during the summer months, entitled up to three children to travel free when accompanied by an adult.

f) Through an ongoing marketing program, designed to increase patronage, special promotions were developed such as fashion shows and musical events on board the ferries and undertook advertizing campaigns designed to highlight the advantages of commuting by the Golden Gate Ferries.

g) Developed community related events which featured the District's ferries, such as celebration of the anniversary of the 1906 earthquake by inviting earthquake survivors for a cruise on one of the Golden Gate Ferries.

5.4.2 No Action

The District could continue to operate its bus and ferry services at their existing levels without implementing the proposed ferry service reductions. This would cause ferry deficits and ferry financial performance to continue at unsatisfactory levels. It would consume funds which might otherwise be available to provide additional buses during the congested peak

periods.

If the gas turbine powered vessels were converted to diesel power, ferry operating deficits would be reduced and financial performance would be improved. At the present time, however, Federal funds for the conversion are not yet assured and it is not possible to predict when the conversion would be completed. In the meantime, financial performance would continue to be unsatisfactory, and funds would be consumed which could otherwise be used to provide additional peak period buses.

6.0 MITIGATION MEASURES

The assessment of Environmental Effects in Chapter 4, indicates that the proposed action would have no significant effect on the physical environment. The assessment, however, has identified a number of effects which may be of concern to the District's Board of Directors. These effects and possible measures to mitigate them are discussed below.

6.1 Ferry System Improvements

The District is currently planning a number of improvements to the Larkspur ferry vessels, facilities and supporting services to improve the efficiency and effectiveness of the ferry service. These improvements include:

a) Conversion of the gas-turbine engined vessels to diesel propulsion to substantially reduce the cost of fuel and maintenance.

b) Extension of canopies and provision of additional seating to increase the practical passenger capacity of the Larkspur vessels.

c) Breakwater construction and/or other appropriate measures (to be determined by technical studies currently underway) to reduce alleged wave related effects on shoreline areas between Larkspur and Tiburon. This would allow shorter trip times and lead to increased patronage.

d) Improvements to ferry restrooms to allow access by persons in wheelchairs.

e) Provision of a free passenger transfer between the ferries and connecting lines of the San Francisco MUNI. (Currently being evaluated as a demonstration project.)

f) Cooperation with San Francisco on a set of projects to improve the physical "interface" between the ferries and MUNI.

g) An arrangement with San Francisco to have available District buses provide a free feeder shuttle service between the San Francisco Ferry Terminal and downtown offices.

Completion of these projects would improve the efficiency and productivity of the ferries and increase the feasibility of re-introducing some or all of the off-peak and weekend Larkspur ferry service.

6.2 Non-Commute Ferries At Special Times

The District could provide Larkspur ferry service at certain off-peak or weekend times in response to particular demand as follows:

a) On special weekend days or holidays during the summer season to provide an alternative to congested condition on the Golden Gate Bridge and connecting highways; or when passenger loads would justify operation of the vessels.

b) During the Christmas shopping season to provide a suitable service for Christmas shoppers and reduce downtown auto congestion.

6.3 Operate Additional Buses

To avoid overload of bus services, due to the diversion of passengers from discontinued ferry services, the District could re-deploy buses which would be available during off-peak or weekend periods, or acquire additional buses for deployment on overloaded routes. The provision of these additional buses could be financed from a part of the reduction in ferry operating deficits which would be achieved by the proposed action.

To maintain an adequate all day service for passengers who wish to return to their cars at the Larkspur Terminal parking lot, to support the market for off-peak ferry service until such time as this service can be reinstated, and to mitigate the economic impacts on business in the Larkspur Landing Complex, a basic bus route (such as Route #70) could be re-routed to provide service all day, seven days per week, between the San Francisco Ferry Terminal and East Sir Francis Drake Boulevard.

6.4 Ferry Utilization Policies

To ensure best possible utilization of the ferry systems capital assets which is compatible with emerging priorities for efficiency and productivity, the District could adopt plans and policies for future utilization of these assets, including possible reinstatement of off-peak and weekend ferry service.

AUTHORS AND PERSONS CONTACTED

This report has been prepared pursuant to the Board of Director's instruction on January 30, 1981. It was undertaken at the direction of Dale W. Luehring, General Manager. The work was performed under the direct supervision of Jerome M. Kuykendall, Director of Planning and Policy Analysis. The principal author and work coordinator was Peter Dyson, Senior Planner. Assistance was provided by Secretaries Rosemary Slemp and Nancy Mirata, and Carol Keena, Graphics Specialist.

Much of the information contained in this report was derived from previous environmental studies or other reports prepared by the District's staff or consultants.

The draft was reviewed by the following senior staff of the District:

David J. Miller, Attorney
Robert D. Tough, Auditor-Controller
Harry D. Reilich, Engineer
Robert A. Warren, Bridge Manager
H. Donald White, Bus Transit Manager
Stanley M. Kowleski, Ferry Transit Manager
Bruce Selby, Director of Marketing

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APPENDIX A

REVIEW AND ANALYSIS OF ALTERNATIVE

FERRY DIVISION FINANCIAL PROJECTIONS

REPORT

TO THE

BOARD OF DIRECTORS

OF THE

GOLDEN GATE BRIDGE, HIGHWAY AND TRANSPORTATION DISTRICT

REVIEW AND ANALYSIS OF ALTERNATIVE FERRY DIVISION FINANCIAL PROJECTIONS

Prepared by:

The Harvey M. Rose Accountancy Corporation

January, 1981

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arvey

ose Accountancy Corporation

1182 Market Street
Suite 422
San Francisco, CA 94102
(415) 552-9292

January 6, 1980

Director John L. Molinari, President
and Members of the Board of Directors
Golden Gate Bridge, Highway and Transportation District
Box 9000, Presidio Station
San Francisco, California 94129

Dear Mr. President and Members:

Transmitted herewith is our report presenting the results of a review and analysis of alternative Ferry Division financial projections. This report was prepared in response to certain issues and questions raised by the Board of Directors. The first section of our report presents the results of our review and analysis of the Ferry Division's five-year deficit projection. We have also reviewed potential savings arising from the conversion of the District's S-165 Gas Turbine Vessels to diesel engines in light of a recently completed feasibility study. The second section of our report discusses our analyses of several policy alternatives and financial impacts should the District decide to terminate ferry services. The policy alternatives and financial impacts vary in the number of transbay bus coaches added to absorb increased transit demand that would occur in the absence of ferry transit opportunities. Finally, the third section of our report presents the results of our limited review of a proposal to contract ferry transit services with Crowley Maritime Corporation.

Our review of these issues focused only on the financial implications involved. We have not considered, or attempted to quantify the significant social and/or environmental costs occasioned by increased bridge traffic congestion.

In November, 1980 the District's Draft Economic and Environmental Analysis of Proposed Toll Increases estimated a five-year Ferry Division deficit at approximately $24.0 million for the period beginning with fiscal year 1980-81 and ending with fiscal year 1984-85. We have analyzed this deficit projection and concluded that the deficit for this period will increase to slightly over $25.0 million, approximately $1 million more than the provisional District estimate. Moreover, the total five-year deficit could approach $25.9 million depending on the actual costs that will be incurred for a recently authorized gear box repair project for the District's Gas Turbine vessels. The increased deficit projection is primarily due to a reduced estimate for future patronage growth on the Larkspur vessels, and reduced revenues as a result. Based on this revised projection, it is evident that Ferry Division fares and concession revenues would have to be increased by an average of 70% over the five-year period to attain the District's policy objective of meeting 50% of total costs from operating revenues.

The diesel conversion alternative, if completed by July 1, 1981, could lower the projected deficit from $25.0 million to $18.3 million for the five-year period ending at the completion of fiscal year 1984-85. This $6.7 million savings (or reduced deficit) would result from greater fuel efficiency and reduced maintenance costs.

A critical issue that must be considered should District ferry services be terminated altogether is the disposition of the Ferry Division's fixed assets and equipment. Any such action requires involvement with the Urban Mass Transit Administration (UMTA) since the federal government contributed approximately 70% of the initial cost of ferry vessels and shore facilities. As directed by the District's Board of Directors, we retained an independent marine surveyor to perform a condition survey of the three Gas Turbine (GT) vessels. The marine surveyor estimated the current market value of the three vessels at $8.0 million each. However, proceeds from the sale of these vessels, or any other equipment or facilities, may be significantly offset by the District's repayment obligations to the federal government.

A key determinant of the District's financial outlook should ferry services be terminated is the extent to which transbay bus coaches are added to restore total transit system capacity. Again, a decision on this issue should consider social and environmental costs as well as financial benefits. Also, we have found that a low probability exists for federal assistance to the District for the addition of new buses. We have performed financial analyses to project future costs and savings in consideration of four alternative policies relative to the addition of new buses for the replacement of ferry transit capacity, both with and without federal participation.

If ferry services were terminated and no new bus coaches were added to the existing fleet, the District could save up to $20.3 million between January 1981 and the end of fiscal year 1984-85. This savings estimate decreases significantly, depending on the prospective number of bus coaches added in the future to restore transit system capacity. For example, 20 additional transbay coaches would have to be added to the existing bus fleet in order to carry those ferry passengers likely to change to bus transit as their next alternative. This estimate is based on our analysis of modal preference among ferry users and assumes full capacity bus utilization. Should 20 transbay coaches be added, the savings from ferry service termination would drop to $16.9 million for this four and one-half year period if federal assistance is available for the acquisition of new buses. If the District were to pay 100% of the new bus acquisition costs (i.e. with no federal participation) these savings would decrease to $13.5 million.

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At the other extreme, District management estimates that 35 additional transbay coaches would have to be added to provide transit capacity sufficient to minimize the consequences of increased bridge traffic. Under this alternative potential savings would decrease to $7.3 million, assuming no federal assistance in the acquisition of new buses and also assuming 90% utilization of the 35 additional transbay coaches (instead of full capacity bus utilization) during the afternoon commute periods.

We have performed a limited review of the Corwley Maritime ferry service proposal which suggests the District could save $5 million over the next twelve months by contracting for the service. However, included in the $5 million savings forecast are federal capital subventions and vessel depreciation which overstate the savings to the District by over $2.2 million. In addition the District would have to incur mothballing costs for the GT vessels which could amount to $600,000 annually. Finally, the District's General Manager has estimated that approximately $312,000 in farebox revenues would be lost to the District as a result of increased trip times. We recognize that the contract proposal is subject to modification, pending discussion of many alternative approaches, and we would be pleased to examine such alternatives for the District at some future date.

Respectfully submitted,

Harvey M. Rose
President

TABLE OF CONTENTS

		Page
Introduction		1
Section	I: Review and Analysis of Ferry Deficit Projection	3
	I.1: Analysis of Ferry Division Deficit	4
	I.2: Estimated Savings from Diesel Conversion	7
Section	II: Alternative Financial Impacts of Ferry Service Termination	9
	II.1: Estimated Value of Gas Turbine Vessels	10
	II.2: Reallocation of District Overhead Costs	13
	II.3: Increased Demand for Bus Service	15
	II.4: Decreased Bridge Division Surplus	21
	II.5: Summary of Financial Impact	23
	II.6: Comparison of Ferry Service Termination Savings with Diesel Conversion Savings	26
Section	III: Ferry Service Operations by Contract	27
Attachment	I: Text of Crowley Maritime Corporation Proposal	29

INTRODUCTION

The Harvey M. Rose Accountancy Corporation, at the direction of the Board of Directors of the Golden Gate Bridge, Highway and Transportation District (GGBHTD) has prepared the following report presenting the results of our review of the projected GGBHTD Ferry Division deficit and examination of the financial effects of various potential alternatives. These alternatives include the termination of Ferry transit services, or contracting Ferry operations to a private operator.

Section I of this report presents the results of our analysis of the Ferry Division deficit projection over the next five years (fiscal years 1980-81 to 1984-85). The starting point of our review was the Five Year Financial Projection prepared by the District for inclusion in a draft Economic and Environmental Analysis of Proposed Toll Increases (November, 1980). This projection indicated that the estimated Ferry Division deficit for 1980-81 would be approximately $3.9 million and would increase to $6.1 million in 1984-85 assuming constant fares and operating schedules. The total estimated deficit over this period approximates $24 million.

Our review of the Ferry Division financial projection, presented in Section I, has employed the latest information on patronage, revenues and expenses for the current 1980-81 fiscal year. Additionally, we have reviewed historical Ferry patronage trends, revenues and expenditure rates. The revised projection assumes constant fares and schedules and also assumes inflation factors equivalent to those used in the District's November, 1980 economic analysis.

Since the writing of the draft Economic and Environmental Analysis, the District has received a report on the technical feasibility of converting the Ferry Division's gas turbine powered vessels used for Larkspur service to diesel propulsion. This independent report has largely confirmed the provisional analysis performed by Ferry Division management, which concluded that substantial savings (i.e. a reduction in the Ferry Division deficit over the next five years) could result from the conversion. This reduction in the deficit would occur primarily because of significantly decreased maintenance and fuel expenses. We have reviewed the Ferry Division's projected savings and revised this analysis based on the latest information available. The results of our review of the diesel conversion alternative are presented in Section I.2 of this report.

Section II of our report addresses the effect on District finances should ferry operations be terminated. This alternative involves several issues that are not easily separated for analysis. First, consideration must be made with regard to liquidation of the ferry system's assets and repayment obligations to the federal government. At the direction of the Board of Directors, we have retained a marine surveyor to appraise the District's three S-165 gas turbine vessels. This marine survey has provided us with an estimated fair market valuation and a determination of replacement cost for the vessels. We have reviewed overhead costs allocated to the Ferry Division with District Division managers in order to measure the potential financial implications of reducing and re-allocating such costs. We have also considered the increased demand for bus service and potential increase in bridge traffic. Increased bus service would require additional capital expense, and we have discussed the likelihood of the District receiving federal subventions for the purchase of new buses with representatives of the Metropolitan Transportation Commission (MTC) and the Regional Administrator of the Urban Mass Transit Administration (UMTA). Increased bridge traffic would result in greater toll revenues but would also cause greater congestion on the bridge especially during weekday commute periods, weekends and holidays.

Section III presents the results of our limited review of a proposal for contracting Ferry services with Crowley Maritime Corporation, a private marine carrier with headquarters in San Francisco. Crowley Maritime presently operates a commuter ferry service between Tiburon and San Francisco and various San Francisco Bay cruise activities as well as their substantial tug and barge operations. Their proposal was presented to an ad hoc committee of the GGBHTD Board of Directors on December 31, 1980. A complete text of their proposal is presented in Attachment I to this report.

SECTION I: REVIEW AND ANALYSIS OF FERRY DEFICIT PROJECTION

The Economic and Environmental Analysis of Proposed Toll Increases, prepared by the District in November, 1980 included a financial projection for the five year period beginning in 1980-81 and ending with fiscal year 1984-85. This financial projection was presented as a planning tool that estimated future conditions and was not characterized as an audited financial statement for a complete fiscal year. The analysis also acknowledged that succeeding years' finances can change markedly as conditions differ from those anticipated.

The District's five year projection indicated a total deficit for the Ferry Division of approximately $24 million which would have to be partially subsidized by bridge tolls and other revenues between the beginning of the current fiscal year and the completion of 1984-85. Revenues were projected, based on current fares and schedules, to increase in proportion to total patronage which was estimated to grow at 10% per year for Larkspur service and to remain constant at 1 million passengers yearly for the Sausalito ferry beginning in 1981-82. The effective annual growth in farebox revenues was projected at approximately 5% annually and approximately 7% for concession revenues. Current budgeted revenue for 1980-81 formed the base for this projection.

Future expenses were also estimated, based on fixed inflation factors applied to the current year's expenditure budget plus the District's share of future capital projects specified in the Transit Development Plan. The inflation factors were assumed to be 8½% annually for labor costs, 10% for materials and supplies and 15% for fuel. These inflation rate assumptions are consistent with federal guidelines.

In performing our review of the projected Ferry Division deficit, found in Section I.1, we have analyzed past trends (over the past several years) for patronage, total revenues and expenses. Our analysis has also benefitted from the use of current expense and revenue reports for the first five months of 1980-81 (July through November). We estimate that the total deficit for the next five years will increase from the total $24 million projected by the District in November, 1980 to a new deficit total slightly in excess of $25 million. Both the original District projection and our revised financial outlook include $465,000 currently budgeted as the District's share of a proposed diesel conversion for two of the Larkspur Gas Turbine (GT) vessels. This matter is discussed separately in Section I.2. In addition to our revised projection, a recent budget adjustment for gear box repairs could increase the five-year deficit to $25.9 million.

The primary factors leading to the revised deficit projection are reduced total ferry patronage for 1980-81 and a 5% annual growth through the next five years, lower revenues as a consequence, and offsetting savings that have resulted from slightly lower than anticipated operating expenses. Our analysis of patronage growth trends over the last several years has shown that actual ferry patronage has usually fallen short from budgeted targets. Moreover, current year patronage (for the first five months) is down over 10% from the basis that determined this year's farebox revenue estimate. Offsetting the revenue shortfall is the fact that expenses have been somewhat less than anticipated, due primarily to lower than expected fuel prices and salary savings resulting from vacant positions and employee turnover. Based on this revised analysis, it is apparent that the Ferry Division deficit will increase by approximately $1 million for the five-year period over that originally estimated in November, 1980 assuming current fare structures and schedules. If the District were to comply with their current policy calling for attainment of 50% of total expenses from farebox and concession revenues, the fare increase over the next five years would likely have to average 70% in excess of current fares.

I.1 ANALYSIS OF FERRY DIVISION DEFICIT

Based on our analysis of historical trends and the most current revenue, expenditure and patronage data, the table on the following page shows our revised deficit projection for the Ferry Division for the period FY 1980-81 through FY 1984-85.

As can be seen, we project a deficit of $4,196,700 for the FY 1980-81 compared to the provisional District estimate of $3.9 million for this fiscal year. In total for the five year period between FY 1980-81 and FY 1984-85, we project a deficit of $25,087,600. Also, this deficit could grow to over $25.9 million as discussed on page 6.

These financial projections are based on a historical revenue and expenditure analysis from July 1, 1978 through November 30, 1980 and anticipated revenues and expenditures for the remainder of fiscal year 1980-81. Our revenue projections use FY 1978-79 as a base year rather than FY 1979-80 because of a strike which interupted the patronage trend thus making analysis extremely difficult. However, adjusted FY 1979-80 as well as FY 1980-81 patronage data were used in our analysis. From these adjusted data, revenues are projected for the remainder of FY 1980-81. For FY 1981-82 through FY 1984-85, revenues are projected on an average growth of 5% per year.

For the Ferry Division expenses, projections are made through the use of historical data and anticipated needs. From these data, operating expenses were revised for FY 1980-81. Using FY 1980-81 as the base year, we then projected future expenses for FY 1981-82 through 1984-85 by assuming that labor would increase 8.5% per year, fuel would increase 15% per year and maintenance expenses would increase 10% per year over FY 1980-81 projected figures. These assumptions are equivalent to inflation factors utilized in the District's November, 1980 financial projections.

The magnitude of the Ferry Division deficit is extremely sensitive to changes in ridership on the Larkspur vessels. District studies have evidenced that, due to the capacity of these vessels the marginal effect of an increase in farebox revenue, in terms of its impact on the operating deficit, is nearly twice that which could be achieved through reduced operating costs. During the current fiscal year, commute ridership has actually increased slightly despite the substitution of a bus for the 6:05 a.m. ferry run from Larkspur. Sausalito commute ridership has remained stable. However, midday, weekend and holiday patronage have dropped significantly for both Larkspur and Sausalito.

Overall, there has been a significant shortfall in patronage and farebox revenue compared to District budget estimates for this fiscal year. This fact, more than any other, has led us to conclude that the Ferry Division's deficit will be greater than that originally estimated.

Table I

REVISED FERRY DIVISION FINANCIAL PROJECTION

	1980-81	1981-82	1982-83	1983-84	1984-85	Totals
Revenue						
Farebox	$2,653,100	$2,785,800	$2,925,100	$3,071,300	$3,224,900	$14,660,200
Concessions	171,500	180,000	189,000	198,500	208,400	947,400
Total Revenue	$2,824,600	$2,965,800	$3,114,100	$3,269,800	$3,433,300	$15,607,600
Subventions	$1,508,700	$1,609,500	$1,718,200	$1,837,700	$1,969,200	$8,643,300
Expenses						
Operating Expense	(7,727,400)	(8,590,800)	(9,469,100)	(10,442,400)	(11,521,600)	(47,751,300)
Capital Expenditures	(663,600)	(122,200)	(73,800)	(23,600)	(9,000)	(892,200)
Reserve Requirements	(139,000)	(139,000)	(139,000)	(139,000)	(139,000)	(695,000)
Total Expenses	$(8,530,000)	$(8,852,000)	$(9,681,900)	$(10,605,000)	$(11,669,600)	$(49,338,500)
Total Ferry Division Deficit	$(4,196,700)	$(4,276,700)	$(4,849,600)	$(5,497,500)	$(6,267,100)	$(25,087,600)
Patronage	1,804,800	1,895,100	1,989,800	2,089,300	2,193,800	9,972,800

The foregoing analysis did not include a recent authorized budget adjustment to add $849,193 for gear box repair expenses on the GT vessels. With the inclusion of the additional one-time expenditure, the Ferry Division deficit would increase accordingly. If all of these costs are incurred by the District, the estimated five-year deficit will increase to over $25.9 million. However, some of the gear box-related expenses may not be incurred until 1981-82. Also, pending insurance claims and potential warranty reimbursement may offset a significant portion of these costs. The Ferry Division Manager informs that approximately $250,000 of the $849,200 amount could also be saved if the diesel conversion were approved. On the other hand, if the vessels were not converted to diesel engines, modifications to the gear boxes may be necessary to prevent future failures. Such modifications, according to Division management, may cost up to $1.5 million.

SECTION 1.2 ESTIMATED SAVINGS FROM DIESEL CONVERSION

In August of 1980, the Ferry Division Manager presented a preliminary financial assessment of potential savings should the District convert its gas turbine-powered ferry vessels to a more conventional diesel-powered configuration. At that time, management concluded that conversion of two of the vessels would save the District approximately $7.2 million over the 5-year period of 1980-81 to 1984-85. This estimate assumed that two of the vessels would be converted by July, 1981. However, a majority of the savings (perhaps 80%) would begin to accrue as soon as one of the vessels is converted to diesel and put into service. A marine architect was then hired to perform a detailed analysis of the technical feasibility of the diesel conversion. Their report, transmitted to the District on December 12, 1980, provided independent verification of the diesel conversion feasibility.

The Division's expected savings would result primarily from greater fuel efficiency and significantly reduced maintenance costs. Although the vessels' top speed would be reduced somewhat, the impact on run-times would be slight compared to current schedules. The increase from 40 minutes to 45 minutes for certain commute trips would have marginal effects in comparison to the significant offsetting savings in operating costs.

After reviewing the marine engineering report and analyzing the Ferry Division's projection of estimated savings, we have revised the savings estimate for the next five years as summarized below:

Table II

Potential Savings from Diesel Conversion of GT Vessels

	Projected Deficit	Savings From Diesel Conversion	Revised Deficit Projection
1980-81	$4,196,700 *	$6,200	$4,190,500
1981-82	4,276,700	1,380,600	2,896,100
1982-83	4,849,600	1,564,600	3,285,000
1983-84	5,497,500	1,774,000	3,723,500
1984-85	6,267,100	2,012,400	4,254,700
	$25,087,600	$6,737,800	$18,349,800

*Does not include potential gear box repair costs of approximately $850,000.

The revised savings estimate shown above is approximately $460,000 less than the $7.2 million savings estimated by Ferry Division management. This is primarily due to the fact that diesel fuel prices have not increased as rapidly as anticipated during the current fiscal year; the Ferry Division is now paying slightly less than $.90 per gallon in contrast to the budgeted average cost for 1980-81 of $1.15 per gallon. We have adjusted the average fuel price downward to $1.00 per gallon for the last six months of this year in our revised expense projections. Thereafter, we have estimated a 15% per year increase in fuel prices. As a result, although the number of gallons of fuel that will be saved remains the same, the estimated value of the fuel savings is less. However, if price increases for fuel exceed 15% annually in the future, the savings in fuel expenses will be commensurately greater.

The aforementioned potential gear box-related savings (for needed repairs and future modifications, see page 6) would be in addition to the savings specified above. Although insufficient information exists to predict the amount of additional savings, they could approach $1.3 million according to District management, since $250,000 in current repair expenses would be saved and future modifications that may cost $1.5 million would not be necessary. If these expenditures are incurred the deficit projections indicated above will increase by a like amount. Although the total savings from diesel conversion would increase if these costs are defrayed, the net deficit, approximately $18.3 million through 1984-85 after diesel conversion, would remain the same.

SECTION II: ALTERNATIVE FINANCIAL IMPACTS OF FERRY SERVICE TERMINATION

The District's consideration of terminating ferry service neccessitates careful examination of a number of issues, each requiring several possible policy decisions which can result in significantly different financial and social costs. The initial policy decision required would involve liquidating or altering the use of the Ferry Division's fixed assets and equipment. At the direction of the Board of Directors, we retained a marine surveyor to provide an independent appraisal of the S-165 (gas turbine) vessels used for Larkspur service. We have obtained estimates of the current fair market value of these vessels and their replacement costs. The potential sale of these vessels must consider the District's obligation to the Urban Mass Transit Administration (UMTA) which funded approximately 70% of their original purchase. In addition, UMTA participated in the acquisition of land and construction of improvements (the ferry system's shore facilities) and repayment obligations would apply if these assets were sold or used for an alternative purpose that UMTA might view as inconsistent with the original intent of public transit related activities. According to a preliminary analysis of this issue by the District's Attorney, any action along these lines would have to be preceded by UMTA approval. We are unable to calculate the net financial impact due to proceeds that may be realized as offset by the contingent liability of repayment obligations to the federal government until any such negotiations might be finalized. The valuation report on the Larkspur vessels is presented in Section II.1.

Other long range policy decisions involving the District's position on providing additional bus service and coping with increased bridge traffic would also be required. We have analyzed the financial implication of three such policy alternatives. First, the District could decide merely to terminate the ferry service without increasing bus service beyond its current capacity. Second, the District could increase bus system capacity based on the most probable immediate increase in the demand for bus transit. Third, the District could increase bus services beyond the most probable increase in demand for bus transit in order to provide sufficient capacity to carry all current ferry system users so that the resulting impact on bridge vehicle traffic would be minimized. Under this alternative, the opportunity for no increase in congestion would exist and the District's bus system would have the capacity to permit attainment of this existing policy. Throughout our analysis, we have considered only the impact of terminating Larkspur Ferry service since Sausalito service would most probably be continued by a private carrier.

The potential financial implications of the policy options described above are discussed separately for the Bus Division and the Bridge Division in sections II.3 and II.4. These are preceded by a discussion of potential effects on the allocation of District Division costs now charged to the Ferry Division in Section II.2.

An important element of the District's decision to add buses should ferry services be terminated will be the availability of Federal funds to reduce the District's expense to 20% of total acquisition costs. We have discussed this matter with both the Metropolitan Transportation Commission and the UMTA Regional Administrator. In each case, we received little indication that federal funds for the purchase of new buses (as opposed to the planned replacement of the existing fleet) would be available. Several reasons were provided as justification for this assessment. First, the recent delay of long term funding legislation for UMTA suggests that less federal money may be available for public transit in the future. Second, with regard to UMTA Section 5 funds administered by MTC, current funding priorities are limited to bus replacement and facility improvements for Bay Area transit properties. Finally, with regard to Section 3 discretionary funds

administered directly by UMTA, the GGBHTD would have to compete with other demands placed on these funds. At this time Section 3 funding priorities are also focusing on the need for transit-related facility improvements.

Since the probability of the District receiving federal assistance for the purchase of new buses seems very low at this time, we also discussed the possible use of proceeds from the sale of Ferry Division assets for this purpose. Under such an alternative, these funds could conceivably be re-invested in public transit if permissible, thereby reducing the District's repayment obligations to the Federal government. On this point, the response of the Regional Administrator indicated that UMTA would be open to discussion and willing to consider this alternative. An official inquiry from the District on these matters was suggested by the UMTA Regional Administrator as the appropriate mechanism to initiate consideration of these alternatives.

SECTION II.1: Estimated Value of Gas Turbine Vessels

Page 12 of this sub-section presents the preliminary valuation report for the District's three S-165 Gas Turbine (GT) Vessels used for Larkspur service. This report is provided by the United States Salvage Association, Inc., as an independent marine surveyor retained by the Harvey M. Rose Accountancy Corporation. A final condition valuation report will be provided to the District in the near future.

The estimated valuations are summarized below:

	For Each GT Vessel	Total for 3 GT Vessels
Estimated current market value	$8.0 million	$24.0 million
Original purchase price	$4.315 million	$12.945 million

The estimated replacement cost for each GT vessel is $13.8 million.

The indicated market value for the vessels is an estimate provided by the marine surveyor. The actual fair market value would of course depend on many factors, primarily the existence of a willing buyer or buyers. These values are appraisals based on the current configuration of the vessels and do not consider any change in value that may occur as a result of the prospective diesel conversion.

If the District decided to terminate ferry service at this time, certain "mothballing" costs would likely be incurred for the time period that would elapse between the initial layup and disposition of the Division's assets. Alternatively, the District could decide to mothball the ferry system but retain ownership of facilities and equipment until such time as conditions might provide a favorable economic climate for cost-effective operations.

The Ferry Division Manager has analyzed this alternative and concluded that the costs of mothballing the entire system, including vessels and terminal facilities used for both Larkspur and Sausalito service, would approximate $1.2 million annually in current (uninflated) dollars. This analysis is based on assumptions that it would be desirable to maintain the vessels and facilities in such a manner as to minimize deterioration while they were not in use. Such precautionary measures, while seemingly expensive to perform, would appear to be sensible as the marketability of division assets would be preserved for eventual sale. Also, if the District decided to mothball the system until its financial feasibility improves, start-up costs would be minimized through systematic maintenance and preservation.

This cost estimate is for a shutdown of the entire ferry operation, including all vessels and terminal facilities now used for both Larkspur and Sausalito service. Included in this $1.2 million annual cost would be approximately $135,000 for terminal security. If as an alternative, only the 2 GT vessels were mothballed the Ferry Division estimates an annual cost of $600,000, again assuming a full program of routine and preventive maintenance.

We have been unable to acquire an independent estimate of mothballing costs since such costs would vary significantly depending on required conditions and maintenance factors. Also, if the vessels were not tied up at Larkspur, the District would incur dockage and moorage charges.

FORM NO. 40A
REV. 1/77

UNITED STATES SALVAGE ASSOCIATION, INC.

14 WALL STREET — NEW YORK, N.Y. 10005

OFFICE: SAN FRANCISCO, C.

CASE NO. 62-9246

PRELIMINARY ADVICE

DATE: DEC. 22, 198(

INSPECTION
TO ASCERTAIN CONDI-
TION (VALUATION) XXX FOR INSURANCE
XXXXXXXXXXXXXXXXXXXXXXXXXPURPOSES

XXXXXXXXXXXXXXXXXXXX

II.2 REALLOCATION OF DISTRICT DIVISION OVERHEAD COSTS

The present method of allocation of the District Division expenses to the three operating divisions results in a charge to the Ferry Division of $905,129 (24% of total District Division costs). The District's Finance-Auditing Committee is presently considering a proposal which would revise the present allocation and would reduce the expenses allocated to the Ferry Division by $293,162 to $611,967 (16.5% of total District Division costs). While some of the District Division's costs can be directly attributed to the operation of the Ferry Division, many cannot be directly related to the Ferry Division nor could they be expected to result in budget reductions in the event that the GGBHTD Ferry service were terminated. Based upon a review of budgeted expenditures with each manager of the District Division, we have identified an amount of $289,579 which could reasonably be expected to be reduced if the GGBHTD Ferry Service were terminated. These reductions identified by District Division management are as follows:

Table III

Potential Reduction and Reallocation of District Overhead Costs

	Present 1980-81 Budget	Estimated 1980-81 Budget Without Ferry Service	Possible Reduction
Board of Directors	$138,300	$138,300	-0-
General Manager	462,494	454,857	$7,637
District Secretary	137,405	137,405	-0-
Auditor-Controller	879,491	851,220	28,271
Engineering Department	593,604	518,604	75,000
Marketing Department	573,942	442,958	130,984
Personnel Department	263,545	255,045	8,500
District Services	673,982	634,795	39,187
Planning & Policy	270,249	270,249	-0-
Totals	$3,993,012	$3,703,433	$289,579

While it may be possible that the full amount presently allocated to the Ferry Division could be reduced from the District Division budget, for purposes of this analysis we have assumed that a reduction of only $289,579 would actually occur and would affect the costs of other operating Divisions at present spending levels as follows:

	Present Allocation of District Division Costs	Estimated Allocation Without Ferry Service	Net Change in Allocation of District Division Costs
Bridge Division	$1,472,196	$1,787,978	$315,782
Bus Division	1,397,537	1,697,305	299,768
Ferry Division	905,129	-	(905,129)
Bridge Capital	110,000	110,000	-
Bus Capital	108,150	108,150	-
Totals	$3,993,012	$3,703,433	($289,579)

Ultimately, the reduction in overhead expenses will necessitate certain Board policy guidelines. For example, some of the potential savings in the Marketing Department would be achieved by reducing the number of information center clerks, proportionate to the number of calls handled related to Ferry service. If the Board of Directors were to decide that service quality could be improved by not reducing information clerks, then the projected savings would be less. Alternatively, the Board could instruct management to reduce overhead costs by an amount greater than the $289,579 shown above. Recognizing this fact, subsequent sections of this report will use the above described reduction and reallocation of District overhead costs as a baseline for analysis.

II.3 INCREASED DEMAND FOR BUS SERVICE

In the event that the GGBHTD Larkspur ferry service were terminated, many of the present ferry riders (averaging approximately 1,600 passengers per day during the PM commute) would continue to commute via alternate modes to and from San Francisco. The impact on the Bus Division revenues and expenses would vary depending on policy decisions of the Board of Directors. Three possible policy decisions are as follows:

1. No additional equipment. The only increased bus service which could be provided is three additional transbay round trips per day from those coaches presently devoted entirely to ferry feeder service. The net effect of this alternative after considering the decrease in the cost of providing ferry feeder service, the increased cost of three additional transbay round trips per day and the estimated increase in allocation of the District's overhead costs to the Bus Division is estimated at $1.9 million increase over a four and one half year period (i.e.: between January, 1981 and the completion of the 1984-85 fiscal year). Our analysis of this and other alternatives considers only the financial implications involved. We have not attempted to calculate the considerable social and environmental costs resulting from increased bridge traffic congestion especially during commute periods, Sundays and holidays when the problem is particularly serious. These negative impacts associated with traffic congestion include increased air pollution, greater energy consumption and a potential for more traffic accidents which may have financial consequencies for the District. It is the policy of the District to minimize such negative impacts to the extent practicable.

2. A second possible decision would be to provide sufficient additional transbay commute runs to accomodate those ferry patrons whose second choice to ferry service would be bus transportation. Based upon analysis of ridership surveys, we estimate that the alternative mode selected by the 1,600 ferry passengers would be as follows:

Passenger Trips	Number	Percent
Bus Transportation	907	56.7%
Auto Transportation		
New Auto Trip	523	32.7
Join Existing Auto Trip	92	5.7
Form Car Pool	64	4.0
Would Not Make Trip	14	.9
	1,600	100.0%

In order to accomodate the estimated 907 patrons who could be expected to choose bus transportation, an additional 20 transbay round trips would be required per day. To provide this additional service 17 additional coaches would be required plus 2 spares for a total requirement of 19. The net increased cost to the Bus Division including the cost of the increased service, elimination of ferry feeder service, increased District overhead costs and the District's share (20%) of acquiring 19 additional coaches is estimated at $4.4 million over a four and one half year period. In the event that the 80% federal matching funds are not available and the GGBHTD were to acquire the coaches without federal participation, this cost estimate would be increased by $3.4 million to $7.8 million for the four and one half year period.

3. A third alternative would be to provide sufficient additional transbay commute runs to accomodate those ferry commuters whose alternative choice would be either bus transit or increased auto trips. This alternative would provide sufficient bus system capacity to accomplish the policy objective of the GGBHTD Board of Directors to hold auto traffic at the present level on the Golden Gate Bridge. This policy decision would assume that approximately 1,430 patrons (1,600 less 170 who could be expected to form car pools, join existing auto trips or not make the trip at all) would be accomodated by bus transportation. To provide this additional service for 1,430 commuters (not necessarily the same individuals presently utilizing the ferry) 31 additional transbay round trips would be required per day. To provide these additional transbay trips, 28 additional coaches plus 3 spares would be needed for a total requirement of 31. The net increased cost to the Bus Division including the cost of increased service, elimination of ferry feeder service, increased District overhead costs and the local share (20%) of acquiring 31 additional coaches is estimated at $6.1 million over a four and one half year period. In the event that the 80% federal matching funds were not available and the GGHBTD were to acquire the coaches without federal participation, the cost estimate would be increased by $5.6 million to $11.7 million for the four and one half year period.

4. In our analysis we computed the needed additional buses using a 'load factor' of 100%, or approximately 45 passengers per bus per transbay trip. We have been informed by the District's General Manager that the preferred planning and scheduling practice require such calculations to be performed with a load factor of less than capacity, such as 90%. Thus, even though the District's afternoon transbay service is now running at capacity, the District maintains that to provide sufficient bus service to carry all displaced Ferry users, extra busses would be needed in contrast to the calculations that we have made using full-capacity parameters. Alternative 4 shows the impact of using a 90% load factor in estimating the required new busses. Under this alternative, four additional buses would be purchased for a new total of 35.

According to the Bus Division Manager, the Bus Maintenance facilities of the GGBHTD are presently inadequate for the existing Bus Division fleet and preliminary planning is now being done to enlarge these facilities. Desired additions to the main shop, stockroom, unit shop, fuel building and body shop can be expected to cost approximately $2.1 million according to the District's Engineering Department. Assuming that these facilities are to be improved within the near future with 80% Federal participation, the local share of approximately $415,000 would have to be added to the Bus Division projected deficit. In addition, we were advised that an additional service facility would be desirable in South Marin (similar to the Novato facility which could be expected to cost approximately $2.4 million not including land acquisition) but may reduce operating costs sufficiently to amortize its cost. Since these improvements in service and maintenance facilities are presently contemplated to service the current Bus Division fleet, it is not expected that the effect of adding 20 to 30 coaches would increase facility requirements.

The individual revenue and expense items which would be affected by each of these alternatives are shown in the attached tables.

Table IV: Termination of Ferry Service

Alternative Impacts on Bus Division Deficit

	Last 6 Months 1980-81	Fiscal Year 1981-82	Fiscal Year 1982-83	Fiscal Year 1983-84	Fiscal Year 1984-85	Totals 4½ Years
Alternative 1 (3 Additional Transbay Roundtrips)						
Ferry Feeder Cancellation:						
Reduced Expenses	226,700	496,300	542,400	593,100	648,700	2,507,200
Eliminate Ferry Feeder Credit	(226,700)	(496,300)	(542,400)	(593,100)	(648,700)	(2,507,200)
Additional Transbay Service:						
Increased Expenses	(64,700)	(141,700)	(154,900)	(169,300)	(185,200)	(715,800)
Increased Revenues	41,600	90,700	98,200	105,800	113,300	449,600
Increased Overhead Allocation	(149,900)	(328,200)	(358,800)	(392,200)	(429,000)	(1,658,100)
Net Increase in Bus Division Deficit	(173,000)	(379,200)	(415,500)	(455,700)	(500,900)	(1,924,300)
Alternative 2 (20 Additional Transbay Roundtrips)						
Ferry Feeder Cancellation:						
Reduced Expenses	226,700	496,300	542,400	593,100	648,700	2,507,200
Eliminate Ferry Feeder Credit	(226,700)	(496,300)	(542,400)	(593,100)	(648,700)	(2,507,200)
Additional Transbay Service:						
Increased Expenses	(430,200)	(942,100)	(1,029,800)	(1,125,900)	(1,231,500)	(4,759,500)
Increased Revenues	269,500	587,900	636,800	685,700	734,600	2,914,500
Increased Overhead Allocation	(149,900)	(328,200)	(358,800)	(392,200)	(429,000)	(1,658,100)
Increased Capital Costs:						
Cost of Coaches (@20%)		(627,000)				(627,000)
Increased Reserve Requirement	(26,100)	(52,300)	(52,300)	(52,300)	(52,300)	(235,300)

Table IV (Cont.)

	Last 6 Months 1980-81	Fiscal Year 1981-82	Fiscal Year 1982-83	Fiscal Year 1983-84	Fiscal Year 1984-85	Totals 4½ Years
Net Increase in Bus Division Deficit	(336,700)	(1,361,700)	(804,100)	(884,700)	(978,200)	(4,365,400)
Federal Share:						
Cost of Additional Coaches		(2,508,000)				(2,508,000)
Additional Reserve Requirement*	(104,500)	(209,000)	(209,000)	(209,000)	(209,000)	(940,500)
Net Increase if 100% GGBHTD Funds are Used for Coaches	(441,200)	(4,078,700)	(1,013,100)	(1,093,700)	(1,187,200)	(7,813,900)
Alternative 3 (31 Additional Transbay Roundtrips)						
Ferry Feeder Cancellation:						
Reduced Expenses	226,700	496,300	542,400	593,100	648,700	2,507,200
Eliminate Ferry Feeder Credit	(226,700)	(496,300)	(542,400)	(593,100)	(648,700)	(2,507,200)
Additional Transbay Service:						
Increased Expenses	(685,200)	(1,500,300)	(1,639,900)	(1,793,000)	(1,961,100)	(7,579,500)
Increased Revenues	422,800	922,200	998,800	1,075,600	1,152,200	4,571,600
Increased Overhead Allocation	(149,900)	(328,200)	(358,800)	(392,200)	(429,000)	(1,658,100)
Increased Capital Costs:						
Cost of Coaches @ 20%		(1,023,000)				(1,023,000)
Increased Reserve Requirement	(42,600)	(85,300)	(85,300)	(85,300)	(85,300)	(383,800)
Net Increase in Bus Division Deficit	(454,900)	(2,014,600)	(1,085,200)	(1,194,900)	(1,323,200)	(6,072,800)
Federal Share:						
Cost of Additional Coaches		(4,092,000)				(4,092,000)
Additional Reserve Requirement*	(170,500)	(341,000)	(341,000)	(341,000)	(341,000)	(1,534,500)
Net Increase if 100% GGBHTD Funds are Used for Coaches	(625,400)	(6,447,600)	(1,426,200)	(1,535,900)	(1,664,200)	(11,699,300)

Table IV (Cont.)

	Last 6 Months 1980-81	Fiscal Year 1981-82	Fiscal Year 1982-83	Fiscal Year 1983-84	Fiscal Year 1984-85	Totals 4½ Years
Alternative 4 (35 Additional Transbay Roundtrips)						
Ferry Feeder Cancellation:						
Reduced Expenses	226,700	496,300	542,400	593,100	648,700	2,507,200
Eliminate Ferry Feeder Credit	(226,700)	(496,300)	(542,400)	(593,100)	(648,700)	(2,507,200)
Additional Transbay Service:						
Increased Expenses	(771,600)	(1,689,500)	(1,846,700)	(2,019,100)	(2,208,400)	(8,535,300)
Increased Revenues	477,400	1,041,200	1,127,700	1,214,400	1,300,900	5,161,600
Increased Administrative Alloc.	(149,900)	(328,200)	(358,800)	(392,200)	(429,000)	(1,658,100)
Increased Capital Costs:						
Cost of Coaches @ 20%		(1,155,000)				(1,155,000)
Increased Reserve Requirement	(48,100)	(96,200)	(96,200)	(96,200)	(96,200)	(432,900)
Net Increase in Bus Division Deficit	(492,200)	(2,227,700)	(1,174,000)	(1,293,100)	(1,432,700)	(6,619,700)
Federal Share:						
Cost of Additional Coaches		(4,620,000)				(4,620,000)
Additional Reserve Requirement*	(192,500)	(385,000)	(385,000)	(385,000)	(385,000)	(1,732,500)
Net Increase if 100% GGBHTD Funds are Used for Coaches	(684,700)	(7,232,700)	(1,559,000)	(1,678,100)	(1,817,700)	(12,972,200)

Note*: The indicated increased reserve requirements assume that replacement costs would also be incurred by the Distri
without federal assistance. These added costs would not occur if federal assistance were provided for the replacement
these buses.

II.4 DECREASED BRIDGE DIVISION SURPLUS

In the event that the GGBHTD ferry service were terminated, Bridge Division finances would be affected in the following ways:

1. The administrative costs could be expected to increase to the Bridge Division by $1.7 million over a four and one-half year period due to the reallocation of the District Division's costs, based on the information presented in Section II.2.

2. The Bridge craft labor charged to the Ferry Division of $96,000 in fiscal year 1980-81 could not be expected to result in a budget reduction according to the Bridge Division Manager. In the event that this cost previously recovered from the Ferry Division could not be reduced from the budget, an additional cost of $.5 million would have to be absorbed by the Bridge Division over a four and one-half year period.

3. Revenues to the Bridge Division could be expected to increase in the event that sufficient additional bus capacity is not provided to accomodate all current ferry system users. We have estimated increased auto trips to be 907 per commute day if 3 additional roundtrips are provided, 523 if 20 additional transbay roundtrips are provided to meet the most probable immediate increase in demand for bus transit service and no increase in bridge traffic if 31 additional transbay roundtrips are provided. Based upon these estimates, increased revenues of $.6 million could be expected if 20 additional transbay roundtrips were provided and $1.5 million could be expected if 3 additional transbay roundtrips are provided over a four and one-half year period.

Again, as discussed on page 15 of this report, our analyses do not attempt to quantify the socio-environmental costs that would be associated with increased bridge traffic congestion.

The potential decreased Bridge Division surplus for the 4½-year period of January, 1981 to June, 1985 ranges from a maximum of $2.3 million to a minimum of $790,000 depending on the level of additional bus service provided. Table V on page 22 details this projection.

Table V: Termination of Ferry Service

Alternative Impacts on Bridge Division Revenues and Expense

Alternative 1 (3 Additional Transbay Roundtrips)	Last 6 Months 1980-81	Fiscal Year 1981-82	Fiscal Year 1982-83	Fiscal Year 1983-84	Fiscal Year 1984-85	Totals 4½ Years
Increased Administrative Allocation	($157,900)	($345,700)	($377,900)	($413,200)	($451,900)	($1,746,600)
Reduction Ferry Division Reimbursement	(48,000)	(104,200)	(113,000)	(122,600)	(133,000)	(520,800)
Increased Revenues (1,293 auto trips daily @ $1)	164,200	328,400	328,400	328,400	328,400	1,477,800
Net Decreased Bridge Surplus	(41,700)	(121,500)	(162,500)	(207,400)	(256,500)	(789,600)
Alternative 2 (20 Additional Transbay Roundtrips)						
Increased Administrative Allocation	(157,900)	(345,700)	(377,900)	(413,200)	(451,900)	(1,746,600)
Reduction Ferry Division Reimbursement	(48,000)	(104,200)	(113,000)	(122,600)	(133,000)	(520,800)
Increased Revenues (523 Auto Trips Daily @ $1)	66,400	132,800	132,800	132,800	132,800	597,600
Net Decreased Bridge Surplus	(139,500)	(317,100)	(358,100)	(403,000)	(452,100)	(1,669,800)
Alternative 3 (31 Additional Transbay Roundtrips)						
Increased Administrative Allocation	(157,900)	(345,700)	(377,900)	(413,200)	(451,900)	(1,746,600)
Reduction Ferry Division Reimbursement	(48,000)	(104,200)	(113,000)	(122,600)	(133,000)	(520,800)
Increased Revenues	-	-	-	-	-	-
Net Decreased Bridge Surplus	(205,900)	(449,900)	(490,900)	(535,800)	(584,900)	(2,267,400)

II.5 SUMMARY OF FINANCIAL IMPACT

The attached table recapitulates the District-wide financial impact of the possible policy options outlined in the previous sections II.3 and II.4 as they relate to the elimination of the Ferry Division deficit, the increased Bus Division deficit and the decreased Bridge Division surplus. Caution must be exercised in interpreting this table for the following reasons:

- Insufficient information exists to determine the net financial effect of either selling or altering the use of Ferry Division's vessels, facilitates and equipment in consideration of the District's repayment obligations to the federal government;

- mothballing costs for vessels and terminals for some unspecified time period are not included in this analysis;

- much of the increased expenses for the Bus and Bridge Division is due to reallocation of the District's overhead costs as discussed in Section II.2; these expenses and their allocation could vary significantly depending on future policy decisions.

Further review and analysis and certain key policy decisions would be required before the net financial impact of the factors described above could be specified.

Also, as mentioned several times before in this report, our analyses focuses on financial impacts only and does not attempt to quantify the socio-environmental costs resulting from increased bridge traffic.

As shown on Table VI, page 24, should ferry services be terminated, the potential savings for the District between January, 1981 and June, 1985, ranges from a maximum of $20.3 million for Alternative 1 to a minimum of $9.0 million for Alternative 3a which assumes no federal assistance.

Table VI

ALTERNATIVE DISTRICT-WIDE IMPACTS OF LARKSPUR FERRY SERVICE TERMINATION

	Last 6 mos. 1980-81	FY 1981-82	FY 1982-83	FY 1983-84	FY 1984-85	Totals 4½ Yrs.
Alternative 1 (No additional equipment)						
Decreased Ferry Divn. Deficit	$2,139,400	$4,276,700	$4,849,600	$5,497,500	$6,267,100	$23,030,300
Increased Bus Divn. Deficit	(173,000)	(379,200)	(415,500)	(455,700)	(500,900)	(1,924,200)
Decreased Bridge Divn. Surplus	(41,700)	(121,500)	(162,500)	(207,400)	(256,500)	(789,600)
Net Savings to GGBHTD	$1,924,700	$3,776,000	$4,271,600	$4,834,400	$5,509,700	$20,316,400
Alternative 2 (20 additional transbay coaches with federal participation)						
Decreased Ferry Divn.Deficit	$2,139,400	$4,276,700	$4,849,600	$5,497,500	$6,267,100	$23,030,300
Increased Bus Divn. Deficit	(336,700)	(1,361,700)	(804,100)	(384,700)	(978,200)	(4,265,400)
Decreased Bridge Divn. Surplus	(139,500)	(317,100)	(358,100)	(403,000)	(452,100)	(1,669,800)
Net Savings to GGBHTD	$1,663,200	$2,597,900	$3,687,400	$4,209,900	$4,836,800	$16,995,100
Alternative 2a (20 additional transbay coaches without Federal participation)						
Decreased Ferry Divn. Deficit	$2,139,400	$4,276,700	$4,849,600	$5,497,500	$6,267,100	$23,030,300
Increased Bus Divn. Deficit	(441,200)	(4,078,700)	(1,013,100)	(1,093,700)	(1,187,200)	(7,813,900)
Decreased Bridge Divn.Surplus	(139,500)	(317,100)	(358,100)	(403,000)	(452,100)	(1,669,800)
Net Savings to GGBHTD	$1,558,700	$(119,100)	$3,478,400	$4,000,800	$4,627,800	$13,546,600
Alternative 3 (31 additional transbay coaches with federal participation)						
Decreased Ferry Divn.Deficit	$2,139,400	$4,276,700	$4,849,600	$5,497,500	$6,267,100	$23,030,300
Increased Bus Divn. Deficit	(454,300)	(2,014,600)	(1,085,200)	(1,194,900)	(1,323,200)	(6,072,900)
Decreased Bus Divn.Surplus	(205,900)	(449,900)	(490,900)	(535,800)	(584,900)	(2,267,400)
Net Savings to GGBHTD	$1,478,600	$1,812,200	$3,273,500	$3,766,800	$4,359,010	$14,690,100
Alternative 3a (31 additional transbay coaches without Federal Participation)						
Decreased Ferry Divn.Deficit	$2,139,400	$4,276,700	$4,849,600	$5,497,500	$6,267,100	$23,030,300
Increased Bus Divn. Deficit	(625,400)	(6,447,600)	(1,426,200)	(1,535,900)	(1,664,200)	(11,699,300)
Decreased Bridge Divn.Surplus	(205,900)	(449,900)	(490,900)	(535,800)	(584,900)	(2,267,400)
Net Savings to GGBHTD	$1,308,100	($2,620,800)	$2,932,500	$3,425,800	$4,018,000	$9,063,600

Alternative 4 shows the impact of using a 90% load factor in estimating the required new buses. Under this alternative, four additional buses would be purchased, for a new total of 35. The 4½-year savings for this alternative is projected at $7.8 million.

Table VI (Cont.)

ALTERNATIVE DISTRICT-WIDE IMPACT OF FERRY SERVICE TERMINATION

	Last 6 mos. 1980-81	FY 1981-82	FY 1982-83	FY 1983-84	FY 1984-85	Totals 4½ Yrs.
Alternative 4 (35 additional transbay coaches without Federal Participation)						
Decreased Ferry Divn. Deficit	$2,139,400	$4,276,700	$4,849,600	$5,497,500	$6,267,100	$23,030,200
Increased Bus Divn. Deficit	(684,700)	(7,232,700)	(1,553,000)	(1,678,100)	(1,317,700)	(12,972,200)
Decreased Bridge Divn. Surplus	(205,900)	(449,900)	(490,900)	(535,800)	(584,300)	(2,267,400)
Net Savings to GGBHTD	$1,248,800	($3,405,900)	$2,799,700	$3,283,600	$3,864,500	$7,790,700

Section 11.6: COMPARISON OF FERRY SERVICE TERMINATION SAVINGS WITH DIESEL CONVERSION SAVINGS

Table VII below summarizes the differences between the savings that are projected for the ferry service termination alternatives and the savings from the diesel conversion of GT vessels alternative. The applicable time period is January, 1981 to June, 1985.

Table VII

	Savings From Ferry Service Termination	Savings From Diesel Conversion	Difference
Alternative 1 (no new bus equipment)	$20,316,000	$6,740,000	$13,576,000
Alternative 2 (20 additional transbay coaches with federal participation)	16,995,000	6,740,000	10,255,000
Alternative 2a (20 additional coaches without federal participation)	13,546,000	6,740,000	6,806,000
Alternative 3 (31 additional transbay coaches, with federal participation)	14,690,000	6,740,000	7,950,000
Alternative 3a (31 additional coaches without federal participation)	9,063,000	6,740,000	2,323,000
Alternative 4 (35 additional coaches without federal participation)	7,790,000	6,740,000	1,050,000

Note: The qualifications discussed on page 22 regarding Table VI also apply to Table VII.

List of Tables

		Page
Table I:	Revised Ferry Division Financial Projections - 1980-81 to 1984-85	5
Table II:	Potential Savings from Diesel Conversion of Gas Turbine Vessels - 1980-81 to 1984-85	7
Table III:	Potential Reduction and Re-Allocation of District Overhead Costs Now Assigned to the Ferry Division	13
Table IV:	Termination of Ferry Service - Alternative Impacts on Bus Division Deficit	18-20
Table V:	Termination of Ferry Service - Alternative Impacts on Bridge Division Revenues and Expenses	22
Table VI:	Alternative District-Wide Impacts of Ferry Service Termination	24-25
Table VII:	Comparison of Ferry Service Termination Savings with Diesel Conversion Savings	26

REPORT

TO THE

BOARD OF DIRECTORS

OF THE

GOLDEN GATE BRIDGE, HIGHWAY AND TRANSPORTATION DISTRICT

PROPOSED FERRY SERVICE ALTERNATIVES

Prepared by:

The Harvey M. Rose Accountancy Corporation

January, 1981

Harvey
Rose Accountancy Corporation

Harvey
Rose Accountancy Corporation

1182 Market Street
Suite 422
San Francisco, CA 941
(415) 552-9292

January 14, 1981

Director John L. Molinari, President
and Members of the Board of Directors
Golden Gate Bridge, Highway and Transportation District
Box 9000, Presidio Station
San Francisco, California 94129

Dear Mr. President and Members:

Transmitted herewith is our report presenting the results of a review and analysis of alternative ferry service proposals as requested by the District's ad hoc committee on January 7, 1981. This report discusses our analyses of the Crowley Maritime proposal, the District's 'austerity service' proposal and the savings resulting from diesel conversion of the gas turbine vessels.

In conducting this review, we have worked closely with District staff and revised certain estimates presented to the Committee on January 7th. As a result of these revisions, we are in substantial concurrence with the District Management estimates. However, we have also noted that the revenue estimates, for both the Crowley Maritime proposal and the District proposal could be subject to significant variation. Despite this qualification, discussed in Section I of the attached report, we are of the opinion that the provisional revenue estimates are reasonable and adequately supported by available data.

At this time, we have not received requested information from Crowley Maritime Corporation. We anticipate receipt of their response on January 21, 1981. Our review and analysis of this new information will be transmitted to the Board of Directors as soon as possible thereafter in accordance with our instructions.

Respectfully submitted.

Harvey M. Rose
President

HMR/am

Background

On January 7, 1981 an ad hoc committee of the Golden Gate Bridge, Highway and Transportation District Board of Directors met to consider a pending proposal to contract Ferry services with Crowley Maritime Corporation. At that time, an alternative proposal was presented to the committee by District management. This alternative proposal suggested that reduced operating deficits could be realized by, instead of contracting the Ferry service, operating on an austerity basis from Larkspur and maintaining current levels of service for Sausalito. Preliminary District estimates illustrated that the reduced deficit resulting from the proposed austerity operation outweighed the proposed savings from operation by Crowley Maritime. Moreover, District management presented their analysis of the Crowley Maritime proposal which concluded that operation by contract would actually increase the Ferry deficit due to additional costs to the District (above the fixed amount proposed for ferry operations) and substantial lost revenues resulting from decreased patronage.

This report presents our analysis of both the existing Crowley Maritime proposal and the Districts new 'austerity service' proposal. The succeeding sections of this report address revenue and expense issues separately for both the Crowley proposal and the District 'austerity' operation. As a result of our review, some revisions have been made to District estimates and we are in substantial agreement with the resulting financial projection.

At this time, we have not received a response to inquiries made to Crowley Maritime Corporation regarding their original proposal. Also, it is anticipated that an alternative proposal from Crowley Maritime, which would provide service comparable to the proposed austerity operation, will be received by January 21, 1981. We will review and report on these items as soon as possible after receiving them.

Attachment I, at the end of this report, provides a summary of expenses and revenues for each of the alternative proposals, as well as current operations. The amount shown for the Crowley proposal has been deflated, since the proposal covers a twelve-month period ending in December 1981, for purposes of comparability.

Section I: Revenue Estimates

The key factor supporting the revised revenue estimates is the extent to which increased travel times adversely affect patronage and farebox revenues. This factor applies to both the Crowley Maritime proposal, which would increase travel times from Larkspur by between ten and twenty minutes, and the District's austerity proposal which would increase travel time by five minutes for both the morning and evening commute runs.

Research has provided ample evidence that commuters are sensitive to time costs when selecting their preferred modes of transit. When all other costs are equal, differences in travel time can cause significant shifts in modal choice. Therefore, it is reasonable to expect decreased patronage when run times increase. However, precise estimation of the magnitude of such a decrease is difficult without extensive measurement and analysis.

The amount of reduced patronage that would result from the alternative ferry operations proposals has been estimated by District staff using two independent sources of data. The first source used was a time preference survey of auto and bus users conducted by Arthur D. Little in 1970. The second source of data used was the actual experience of the Larkspur ferry when increased travel times (due to reduced speeds in the Larkspur channel) resulted in an immediate decrease in patronage. These data were then combined and tested to develop a formula which would predict decreased patronage as a function of the increased travel times. Despite the fact that the data sources were compiled at different points in time (approximately eight years apart), there was surprising congruence in the predicted results.

We have reviewed both the method of estimation and the source data supporting the mathematical formula, and find that the estimated revenue losses have been accurately computed and uniformly applied to each of the pending proposals. In our opinion, the method of computation is reasonable. However, we must qualify this opinion on the basis that the supporting data does not encompass actual experience for significant changes in trip times as would occur under the Crowley Maritime proposal. Large variations between estimated and actual decreased patronage may occur as a result. Nonetheless, we feel that the formula developed by the District represents the maximum likelihood based on available data.

A basic assumption used in the District's revenue estimates for the Crowley Maritime proposal is that the public would perceive no difference between the 60-minute Larkspur commute service (as proposed for four months of the year) and the 50-minute commute service (proposed for eight months of the year). As a result, the decreased patronage is estimated to be equivalent to that which would occur with 60-minute travel times for the full twelve months of the year.

While this assumption may indeed prove valid, predictions of human behavior can be subject to error. We have re-calculated the revenue estimates to illustrate the difference between the uniform perception of 60-minute travel time versus the differential travel times of 60 minutes for four months and 50 minutes for eight months. This difference is summarized below.

	60-Minute Time Assumption*	Crowley Maritime Proposal Revised - 4 Months @ 60 Minutes; 8 Months @ 50 Minutes	Difference
Expenses	$7,310,250	$7,310,250	-
Revenues	2,353,431	2,566,000	212,569
Deficit Without District Overhead Charge	($4,956,819)	($4,744,250)	$212,569

*As shown in Attachment I

By contrast to the above, the operating deficit, not including the District overhead charge, for current Ferry Division operations is now projected at $4,321,671.

Section II: Expense Estimates

Crowley Maritime proposes a fixed price of $6,750,000 for ferry service operatic similar to current schedules between January, 1981 and December, 1981. By contras the District's operating costs (see Attachment I) for current levels of service ar estimated at $7,146,271 (including vessel and terminal depreciation but not includin District overhead costs or capital expenditures). Also not included in the Distric operating costs are anticipated one-time expenses for gearbox repairs.

In addition to the $6.75 million for contract service by Crowley Maritime, certai costs would also be incurred by the District for support and administrative functions. I is estimated that approximately $600,000 annually would be necessary to mothball th Gas Turbine vessels which would not be in use under the Crowley Maritime proposa This cost could change however, based on the desired level of maintenance and upkeep Vessel depreciation, now funded at $139,000 annually would also represent an additiona cost. Currently, approximately $21,000 in expense transfer for Bridge craft labor i charged to the Ferry Division for vessel maintenance. Under the contract proposal, thi expense would return to the Bridge Division. Legal costs, according to the District' Attorney, would decrease from the current level of $140,000 annually to approximatel $100,500 annually under the contract alternative. Audit expenses amounting t approximately $3,500 would also be necessary.

We have reviewed these estimates with District management and conclude tha they are reasonable estimates, with the possible exception of mothballing costs which are dependent on a high-quality maintenance program. Such costs could be scaled down possibly at the risk of vessel deterioration during the layup period.

These additional costs are summarized below and deflated to present the cost shown in Attachment I for the Crowley Maritime proposal.

Contract Cost	$6,750,000
Adjustment to Current Dollars	(303,750)
Cost to Mothball 3 Gt Vessels	600,000
Vessel Depreciation	139,000
Expense Transfer - Bridge	21,000
Legal	100,500
Audit	3,500
Total	$7,310,250

We have also reviewed the expense estimates developed by District staff for the reduced austerity operation. Under this proposal, total operating costs would be reduced from $7,146,271 to $4,468,696 to achieve a savings of approximately $2.7 million annually. The District's operating expense estimates for the current level of service have been revised to reflect the findings presented in our January 6th analysis of Ferry finances. The savings that would be achieved under an austerity operation would result primarily from significantly reduced fuel consumption and a reduction in total employments from the currently authorized 115 Ferry Division positions to 75 positions. The reduced staffing is summarized below:

Function	Current No. of Positions	Proposed No. o Positions
Vessel Operations (Operators and Deckhands)	52	36
Terminal Operations	37	24
Maintenance	23	12
Administration	3	3
Total	115	75

We have reviewed all supporting documents and discussed the proposed program with District staff. Based on this review and based on our familiarity with the Ferry Division's budget and operations we are in substantial concurrence with the proposed savings that would be achieved by the austerity service level.

Certain modifications to the proposed staffing pattern may prove necessary in the future should the District elect to proceed with austerity service. However, such changes would probably be minor and could only be identified after some experience with the reduced operations.

We have also analyzed the estimated savings that would occur under austerity service with diesel conversion of the District's gas turbine vessels. An additional $460,000 annually would be saved, reducing total operating costs to slightly over $4 million annually (see Attachment I). In developing this estimate, the District has used the same information developed in our Ferry Division financial analysis. After reviewing source documents for accuracy, we are in concurrence with the anticipated savings after diesel conversion.

Section III: Proposed Additional Buses to Restore Transit Capacity

The GGBHTD General Manager's proposal to provide an austerity level of service at Larkspur also suggests 14 additional coaches for transbay service. This increase in bus service is intended to offset the decrease in ferry patronage. We have reviewed the staff estimates of revenues, expenses and projected deficits of providing this alternative bus service. The deficit projections of the Bus Division under this proposal would be affected as follows:

Equipment

The projection assumes that 14 additional coaches could be added during fiscal year 1981-82 at a cost to the GGBHTD of $462,000 (acquisition cost of $165,000 per coach x 14 coaches x 20% local share). In the event that 80% federal funding is not available, an additional $1.8 million would have to be added to the deficit projection plus an additional $.8 million for additional depreciation over a five-year period.

Estimated Revenues

The revenues estimated by staff for the added transbay service assume that all deflection from ferry service (2,551 current passengers less 1,646 proposed to be accomodated with the austere Larspur service) or 905 passengers per day would become bus passengers and would pay an average fare of $1.35 for each of 254 commute days resulting in $310,300 in estimated revenues in the first year. While we cannot be sure that 905 passengers is a reasonable estimate of the deflection that will occur, this method of estimating revenues is reasonable and consistent with other aspects of the proposal.

Estimated Expenditure

The staff projections assume that eight additional coaches will be required for both the A.M. and P.M. peak periods with operating costs estimated at $47,000 and that the remaining six coaches would be required only during the P.M. peak period with operating costs estimated at $41,800 per coach for a total estimated cost of $626,800 per annum. We independently computed the cost of this added service assuming that the service could be added at the same cost per transbay trip as existing service and that all 14 coaches would be used in both A.M. and P.M. peak periods. According to our independent computations, using different methodology, the operating cost of this service would be $638,900 or $12,100 more per annum than the staff estimate. We therefore conclude that the staff estimate of $626,800 appears reasonable.

Summary

The estimated deficit of $316,500 for the 14 additional coaches per annum and of $2.5 million for the five-year period (including the cost of the 20% local share of $462,000 in fiscal year 1981-82) appears reasonable. In the event that 80% federal funds are not available, an additional local cost of $2.6 million would be required to provide this same service as shown in the following table:

	Fiscal Year 1980-81	Fiscal Year 1981-82	Fiscal Year 1982-83	Fiscal Year 1983-84	Fiscal Year 1984-85	Five-Year Totals
14 Additional Transbay Coaches						
Additional Transbay Service:						
Increased Expenses Including Depreciation)	($626,800)	(690,000)	(759,100)	(834,900)	(918,400)	(3,829,200)
Increased Revenues	310,300	334,200	360,000	387,700	417,500	1,809,700
Increased Capital Costs:						
Cost of Coaches (@ 20%)		(462,000)				(462,000)
Net Increase in Bus Division Deficit	(316,500)	(817,800)	(399,100)	(447,200)	(500,900)	(2,481,500)
Federal Share:						
Cost of Additional Coaches		(1,848,000)				(1,848,000)
Additional Reserve Requirement*	(154,000)	(154,000)	(154,000)	(154,000)	(154,000)	(770,000)
*Net Increase if 100% GGBBHTD Funds are Used for Coaches	(470,500)	(2,819,800)	(553,100)	(601,200)	(654,900)	(5,099,500)

Golden Gate Bridge, Highway and Transportation District
Alternative Ferry Service Budgets

	Current System	Crowley Proposal	Austerity District Proposal	Austerity District Diesel Proposal
Expenses	$7,146,271	$7,310,250 *	$4,468,696	$4,005,8
Revenue	2,824,600	2,353,431	2,144,922	2,144,9
Deficit without District Division Transfer	(4,321,671)	(4,956,819)	(2,323,774)	(1,860,8
Deficit with District Division Transfer ($905,125)	(5,226,800)	(5,861,948))	(3,228,903)	(2,766,0
Deficit with Proposed District Division Transfer**	(4,933,638)	(5,509,444)	(2,742,878)	(2,257,7
Patronage				
A.M. Commuters	1,071	396	775	7
P.M. Commuters	1,480	858	871	8
	2,551	1,254	1,646	1,6
Fares as % of Expense Without District Division Transfer	40%	32%	48%	54
Fares as % of Expense with District Division Transfer ($905,129)	35%	29%	40%	44
Fares as % of Expense with Proposed District Division Transfer	36%	30%	44%	49

*Costs deflated to provide comparison in current dollars.

**Pending revision to method of allocating District overhead costs.